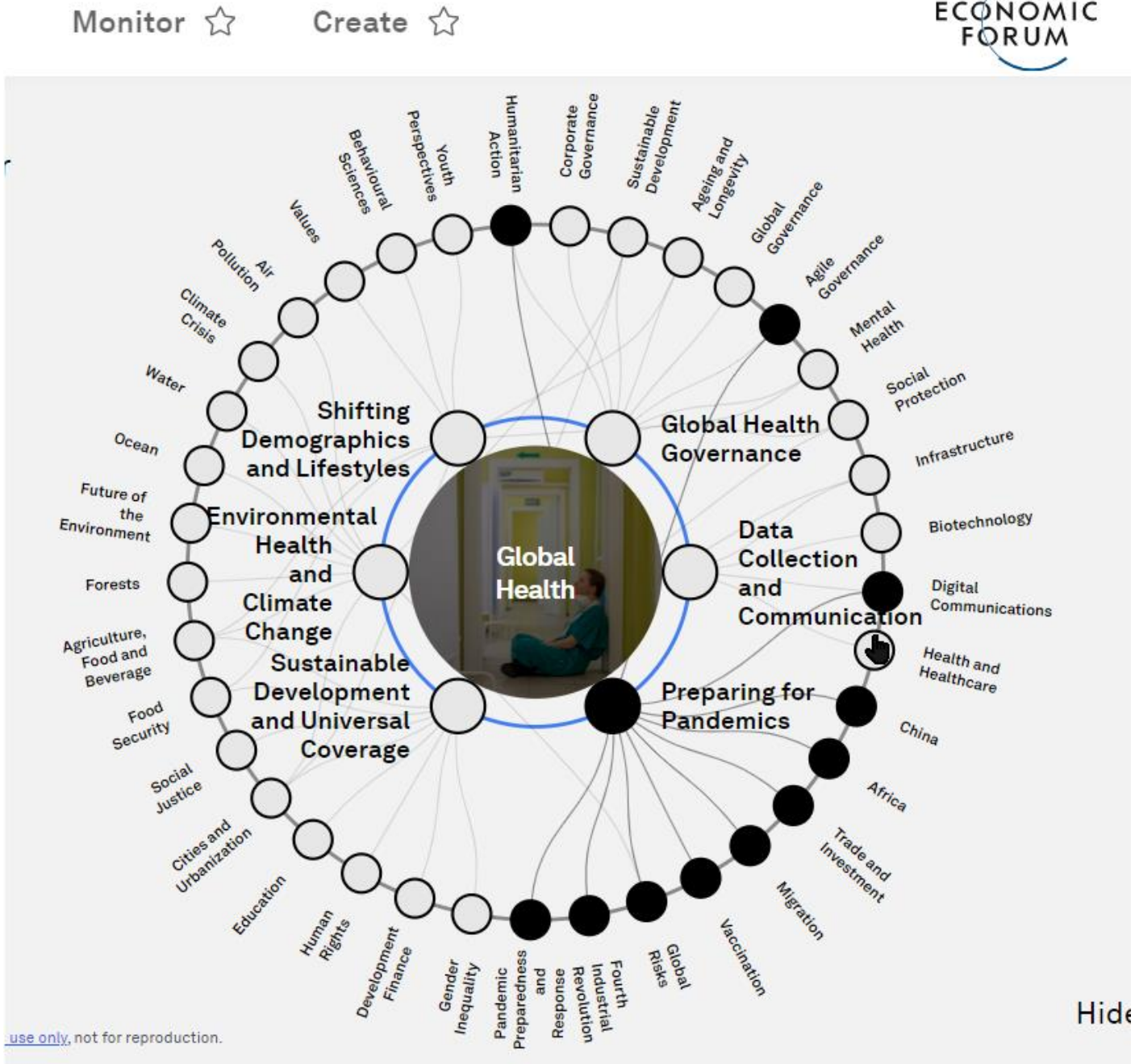
The new post-covid technological medicine – direction required or imposed?
A CALL FOR URGENT DEBATE ON INVISIBLE TECHNOLOGIES

Dr. Geanina Hagimă

- The covid pandemic marked the transition from classical medicine, based on direct doctor-patient interaction, to a new medicine, in which communication, diagnosis and treatment are/will be intermediated or carried out using new technologies, many invisible, on a micro or nano scale.
- Although these changes are occurring rapidly, **new technologies are almost unknown to both doctors and ordinary people.**
- 5G technology, nanotechnology, new mRNA "vaccines" based on nanotechnology, optogenetics, synthetic biology, gene editing, the rise of artificial intelligence, the creation of databases with fully sequenced human genomes, the concept of a digital twin appeared almost simultaneously, which **will bring about a brutal, even shocking, change in medicine in the immediate future**.



https://intelligence.weforum.org/topics/a1Gb00000038pGiEAI/key-issues/a1Gb0000005R1BmEAK

World Health Organization

NINTH MEETING OF THE INTERGOVERNMENTAL NEGOTIATING BODY TO DRAFT AND NEGOTIATE A WHO CONVENTION, AGREEMENT OR OTHER INTERNATIONAL INSTRUMENT ON PANDEMIC PREVENTION, PREPAREDNESS AND RESPONSE
Provisional agenda item 2

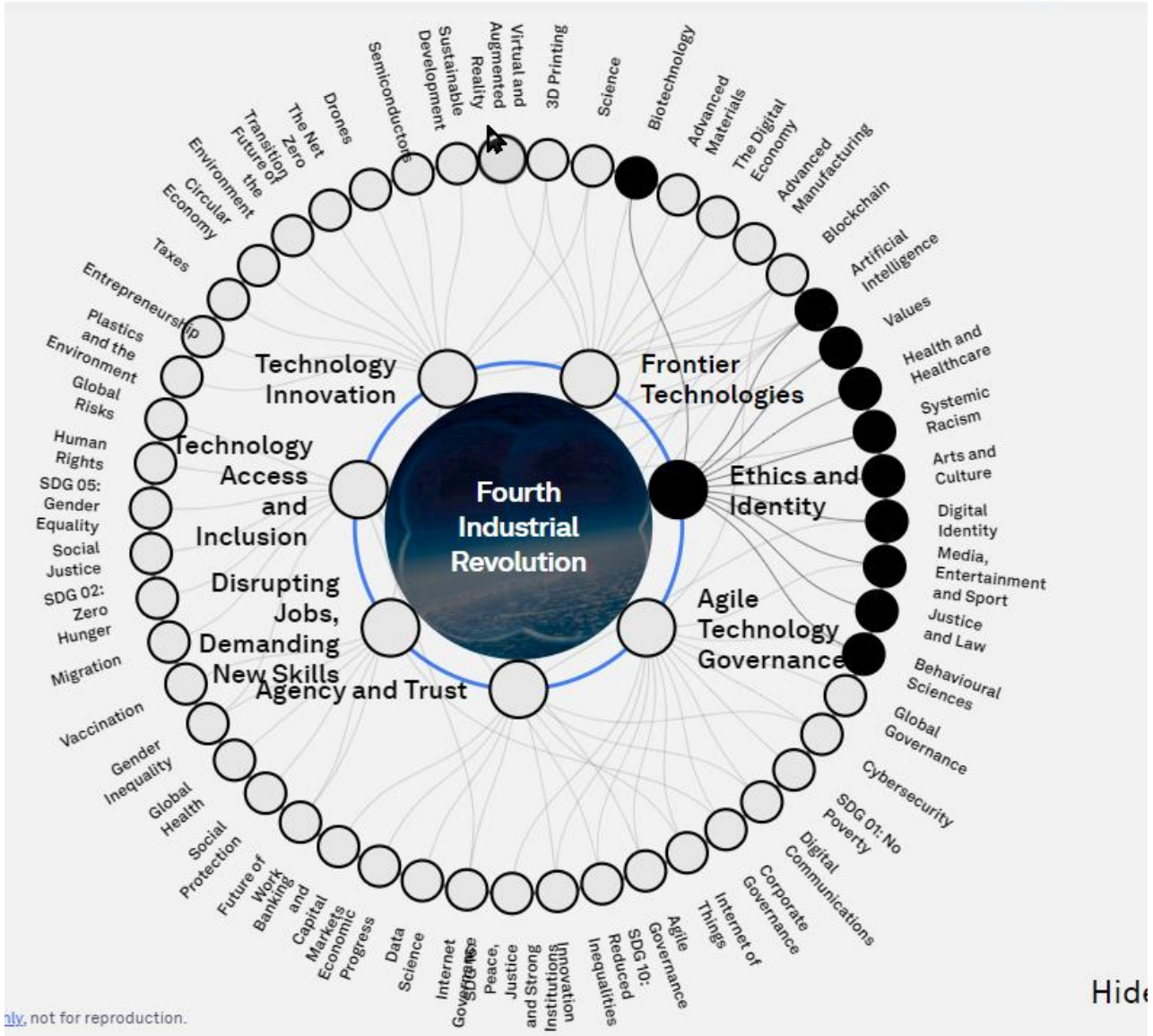
A/INB/9/3
13 March 2024

Revised draft of the negotiating text of the WHO Pandemic Agreement

https://apps.who.int/gb/inb/pdf_files/inb9/A_inb9_3-en.pdf

Monitor ☆ Create ☆

WORLD ECONOMIC FORUM



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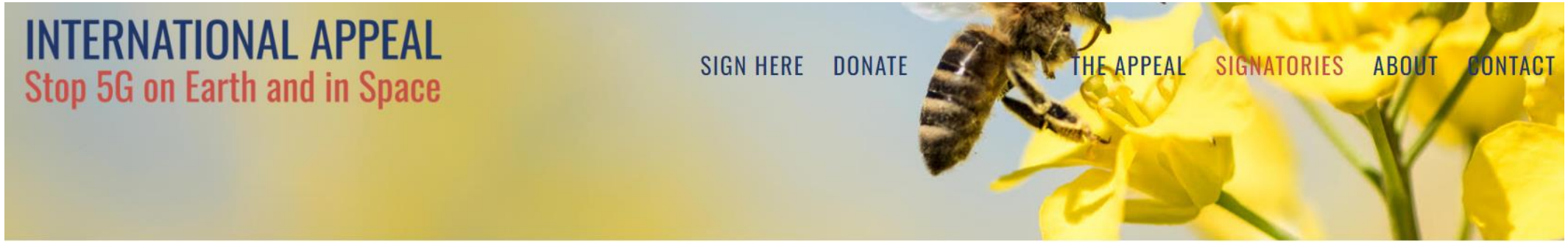
https://intelligence.weforum.org/topics/a1Gb0000001RIhBEAW

HEALTH AND HEALTHCARE SYSTEMS

COVID-19: The Great Reset

Jul 14, 2020

https://www.weforum.org/agenda/2020/07/covid-19-the-great-reset/



Read as PDF in:

Scientists

Scientists

As of May 13, 2024, 305,115 people and organizations from 218 nations and territories have signed this Appeal, including 7,367 scientists.

Below is a partial list of scientists who have signed.

https://www.5gspaceappeal.org/scientists

Danger in the air:

How air pollution can affect brain development in young children

Division of Data, Research and Policy
December 2017

https://www.unicef.org/sites/default/files/press-releases/glo-media-Danger_in_the_Air.pdf

Magnetite pollution nanoparticles in the human brain

Barbara A. Maher[a,1], Imad A. M. Ahmed[b], Vassil Karloukovski[a], Donald A. MacLaren[c], Penelope G. Foulds[d], David Allsop[d], David M. A. Mann[e], Ricardo Torres-Jardón[f], and Lilian Calderon-Garciduenas[g,h]

[a]Centre for Environmental Magnetism and Palaeomagnetism, Lancaster Environment Centre, University of Lancaster, Lancaster LA1 4YQ, United Kingdom; [b]Department of Earth Sciences, University of Oxford, Oxford OX1 3AN, United Kingdom; [c]Scottish Universities Physics Alliance, School of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, United Kingdom; [d]Division of Biomedical and Life Sciences, Faculty of Health and Medicine, University of Lancaster, Lancaster LA1 4YQ, United Kingdom; [e]Division of Neurosci of Manchester, Manchester M6 8HD, United Kingdom; [f]Centro de Ciencias de la At Mexico; [g]Neurotoxicology Laboratory, The University of Montana, Missoula, MT 5

Edited by Yinon Rudich, Weizmann Institute of Science, Rehovot, Israel, and acce for review April 13, 2016)

Significance

We identify the abundant presence in the human brain of magnetite nanoparticles that match precisely the high-temperature magnetite nanospheres, formed by combustion and/or friction-derived heating, which are prolific in urban, airborne particulate matter (PM). Because many of the airborne magnetite pollution particles are <200 nm in diameter, they can enter the brain directly through the olfactory nerve and by crossing the damaged olfactory unit. This discovery is important because nanoscale magnetite can respond to external magnetic fields, and is toxic to the brain, being implicated in production of damaging reactive oxygen species (ROS). Because enhanced ROS production is causally linked to neurodegenerative diseases such as Alzheimer's disease, exposure to such airborne PM-derived magnetite nanoparticles might need to be examined as a possible hazard to human health.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5047173/pdf/pnas.201605941.pdf

PLOS BIOLOGY

PLoS Biol. 2017 Oct; 15(10): e2003234.

Published online 2017 Oct 23. doi: 10.1371/journal.pbio.2003234

Magnetoreception—A sense without a receptor

Gregory C. Nordmann, Tobias Hochstoeger, and David A. Keays*

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5695626/

Our Common Agenda
Policy Brief 7

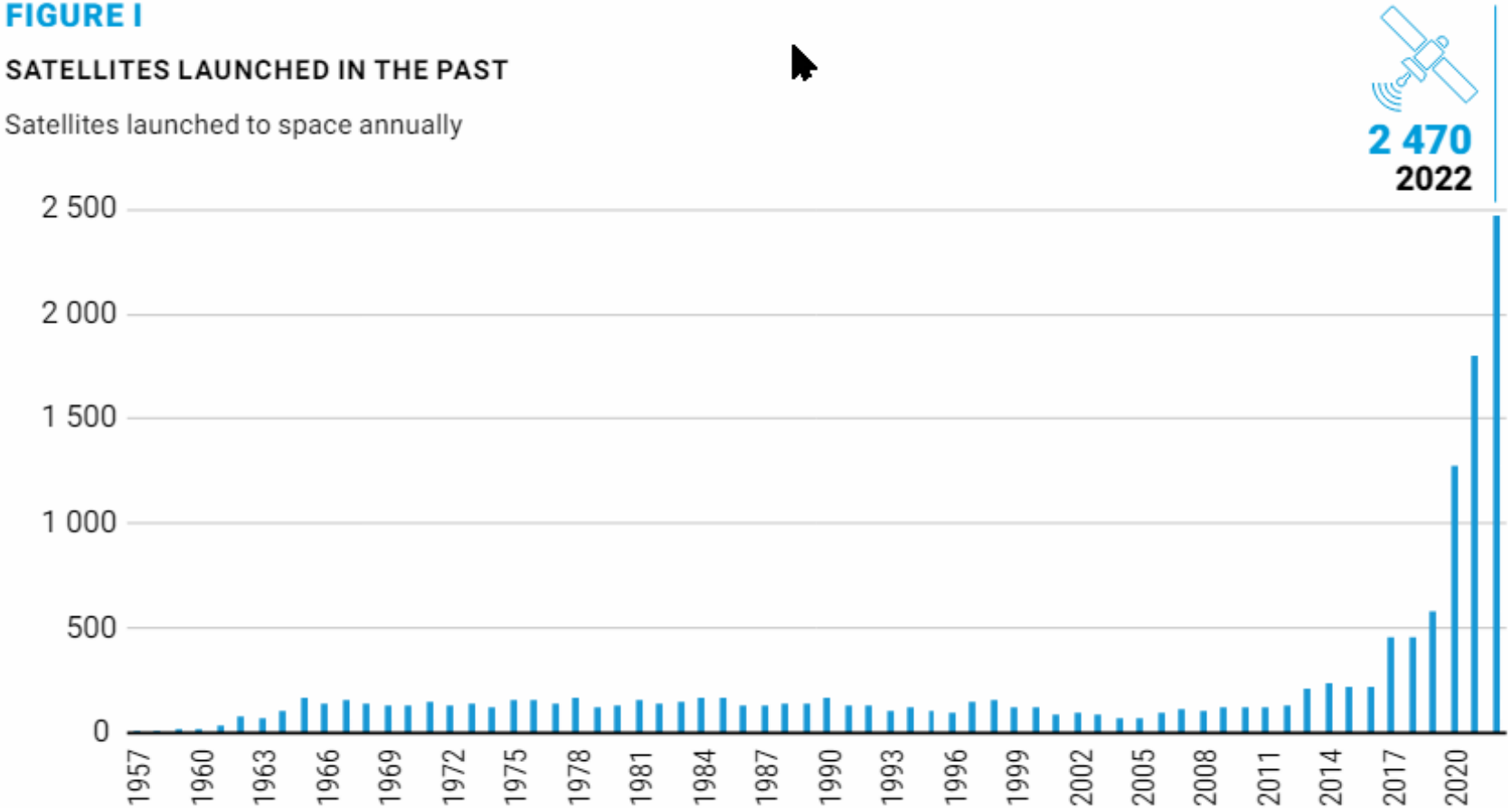
For All Humanity – the Future of Outer Space Governance

MAY 2023

FIGURE I

SATELLITES LAUNCHED IN THE PAST

Satellites launched to space annually



https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf

Our Common Agenda
Policy Brief 7

For All Humanity – the Future of Outer Space Governance

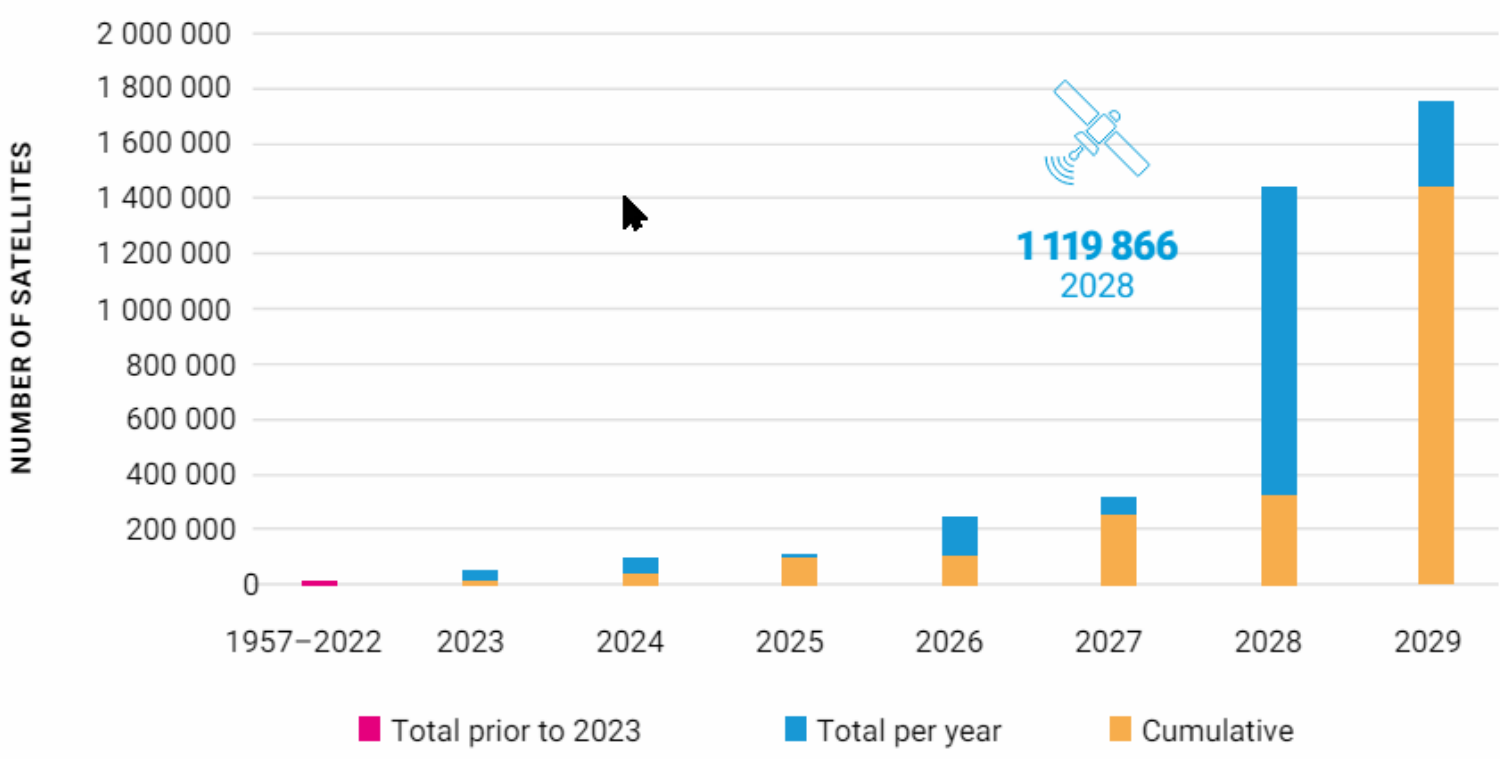
MAY 2023

https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf

SATELLITES REGISTERED TO LAUNCH IN THE FUTURE

Number of non-geostationary satellites for which states have registered radio frequecies with the International Telecommunication Union (by year and cummulative)

For past launches, see figure I.



European Parliament

Health impact of 5G

https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690012/EPRS_STU(2021)690012_EN.pdf

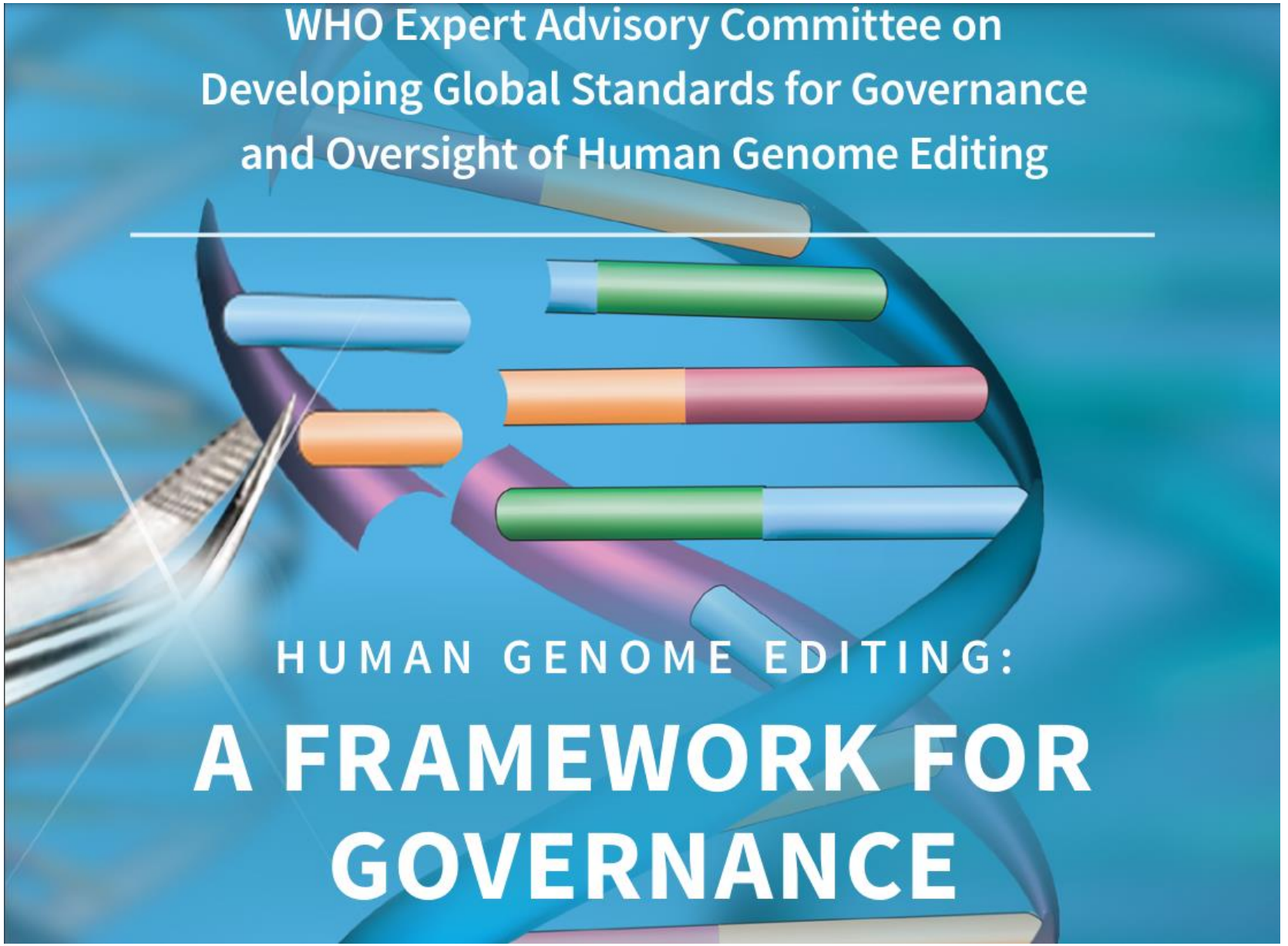
EMERGING TECHNOLOGIES

5 technologies that will transform our lives

Aug 15, 2022

- Technology is developing rapidly and innovations that were once the stuff of science fiction are now an everyday reality.
- AI, VR, gene-editing, blockchain and nanotechnology are the five foundational technologies that will transform our lives.
- These technologies will impact every aspect of our day-to-day lives, from learning to preventing diseases.

https://www.weforum.org/agenda/2022/08/these-five-key-technologies-will-transform-our-lives/



https://iris.who.int/bitstream/handle/10665/342484/9789240030060-eng.pdf?sequence=1

To promote disease resistance: to alter an allele associated with increased risk of a disease or disorder to one that is protective.

- To reduce infectious diseases and parasites, for example, by altering human genes encoding pathogen receptors or that allow pathogen replication (e.g. CC 5 for HIV).
- To reduce cancers due to (i) oncogene activation or(ii tumour suppressor mutations (which can involve lossof heterozygosity, e.g. BRCA1 gene).
- To reduce genetic diseases influenced by known genetic risk factors/alleles (e.g. Alzheimer disease and APOE4 versus APOE2 or APOE3).

To enhance human traits: To alter alleles to other variants, which may be common or rare (and give extreme characteristics), that are present within the family or in other human populations.

- To alter appearance (e.g. eye or hair colour).
- To alter abilities (e.g. muscle mass or perfect pitch).
- To increase muscle type, height, longevity or intelligence.
- To provide resistance to pollutants or other environmental agents such as radiation.

To improve robustness or quality of life: To alter an allele that may be relatively rare or common to a different common allele.

- To increase tolerance to, for example, lactose, gluten or alcohol (e.g. improve diet).
- To reduce blood cholesterol levels (e.g.improve metabolism).
- To avoid adverse drug events or promote better therapy (e.g.so-called reverse pharmacogenomics).

To add non-human traits: To introduce single or multiple genes not present in any human genome (e.g. non-human or synthetic genes).

- To amuse/entertain (e.g. green fluorescent protein).
- To improve sensory systems (e.g.to ultraviolet or infrared light, or electromagnetic fields).
- To obtain nutritional benefit from parts of plants plastics and other materials that humans cannot currently digest.
- To increase tolerance to drought, heat or cold.
- To provide resistance to pollutants or other environmental agents such as radiation.

https://iris.who.int/bitstream/handle/10665/342484/9789240030060-eng.pdf?sequence=1
https://www.who.int/teams/health-ethics-governance/emerging-technologies/human-genome-editing/

sensors MDPI

Sensors (Basel). 2011; 11(1): 771–784.
Published online 2011 Jan 12. doi: 10.3390/s110100771

PMCID: PMC3274074
PMID: 22346602

Journal Article

Directional MAC Approach for Wireless Body Area Networks

Md. Asdaque Hussain, Md. Nasre Alam, and Kyung Sup Kwak*

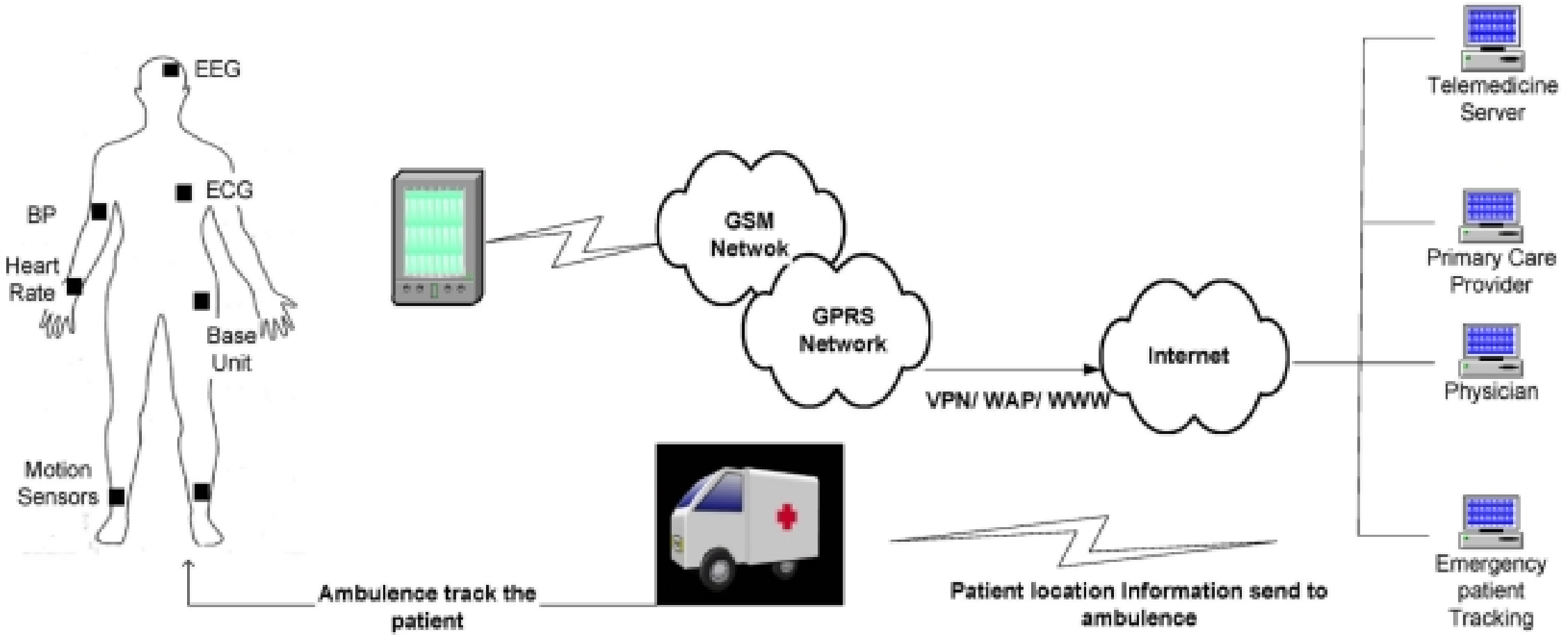
▸ Author information ▸ Article notes ▸ Copyright and License information PMC Disclaimer

Abstract

Go to: ▸

Wireless Body Area Networks (WBANs) designed for medical, sports, and entertainment applications, have drawn the attention of academia and industry alike. A WBAN is a special purpose network, designed to operate autonomously to connect various medical sensors and appliances, located inside and/or outside of a human body. This network enables physicians to remotely

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3274074/



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3274074/

Sensors (Basel). 2011;11(4):3717-37. doi: 10.3390/s110403717. Epub 2011 Mar 25.

A very low power MAC (VLPM) protocol for Wireless Body Area Networks

Niamat Ullah [1], Pervez Khan, Kyung Sup Kwak

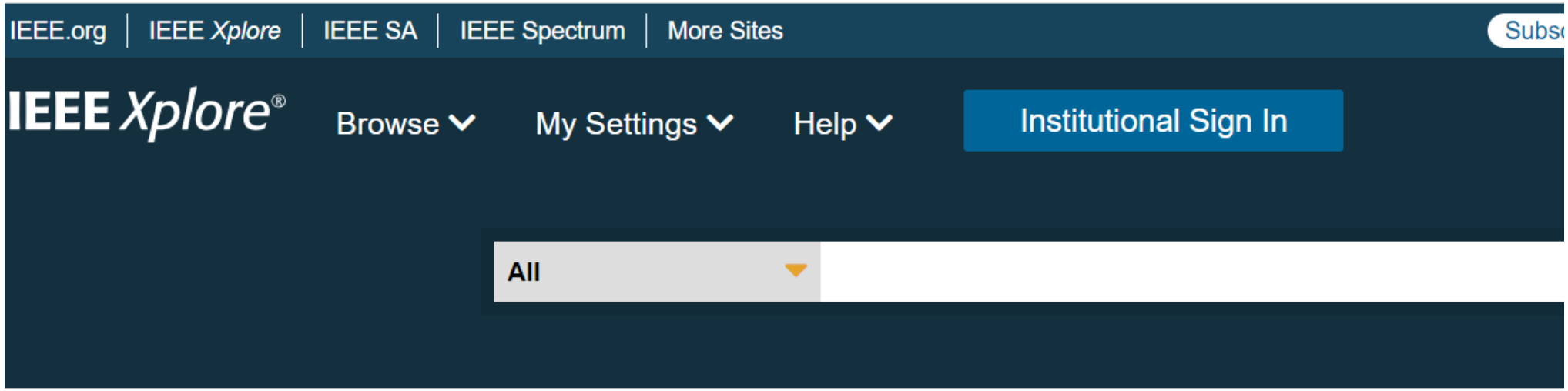
Affiliations + expand

PMID: 22163818 PMCID: PMC3231306 DOI: 10.3390/s110403717

Abstract

Wireless Body Area Networks (WBANs) consist of a limited number of battery operated nodes that are used to monitor the vital signs of a patient over long periods of time without restricting the patient's movements. They are an easy and fast way to diagnose the patient's status and to consult the doctor. Device as well as network lifetime are among the most important factors in a WBAN. Prolonging the

https://pubmed.ncbi.nlm.nih.gov/22163818/



Journals & Magazines > IEEE Access > Volume: 11

Wireless Body Area Networks and Their Applications—A Review

Publisher: IEEE Cite This PDF

D. M. G. Preethichandra ; Lasitha Piyathilaka ; Umer Izhar ; Rohan Samarasinghe ; Liyanage C....

https://ieeexplore.ieee.org/document/10024829/authors#authors

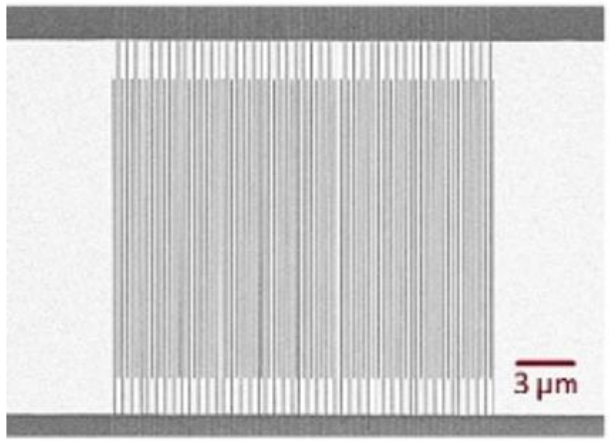
WORLD ECONOMIC FORUM

The possibilities of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge, are unlimited. And these possibilities will be multiplied by emerging technology breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing.

https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

National Nanotechnology Initiative

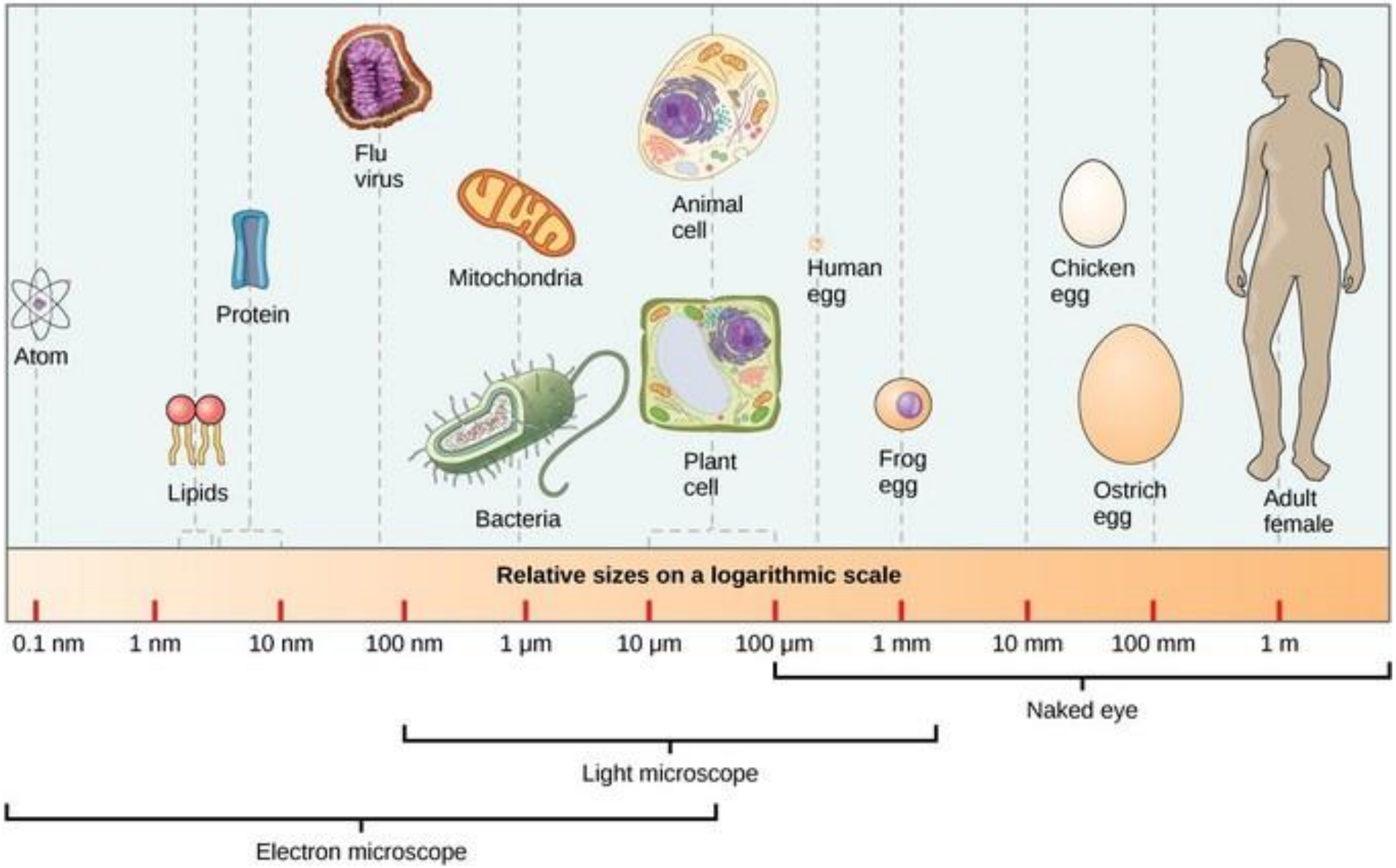
About Nanotechnology



A superconducting nanowire single-photon detector. *Credit: Varun Verma/NIST.*

Nanotechnology is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications. Matter can exhibit unusual physical, chemical, and biological properties at the nanoscale, differing in important ways from the properties of bulk materials, single atoms, and molecules. Some nanostructured materials are stronger or have different magnetic properties compared to other forms or sizes of the same material. Others are better at conducting heat or electricity. They may become more chemically reactive, reflect light better, or change color as their size or structure is altered.

https://www.nano.gov/about-nanotechnology



https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(Boundless)/04%3A_Cell_Structure/4.04%3A_Studying_Cells_-_Cell_Size

Document 32022H0614(01)

Commission Recommendation of 10 June 2022 on the definition of nanomaterial (Text with EEA relevance) 2022/C 229/01

C/2022/3689

OJ C 229, 14.6.2022, p. 1–5 (BG, ES, CS, DA, DE, ET, EL, EN, FR, GA, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

1. 'Nanomaterial' means a natural, incidental or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:

   (a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;

   (b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;

   (c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0614(01)

Document 32011H0696

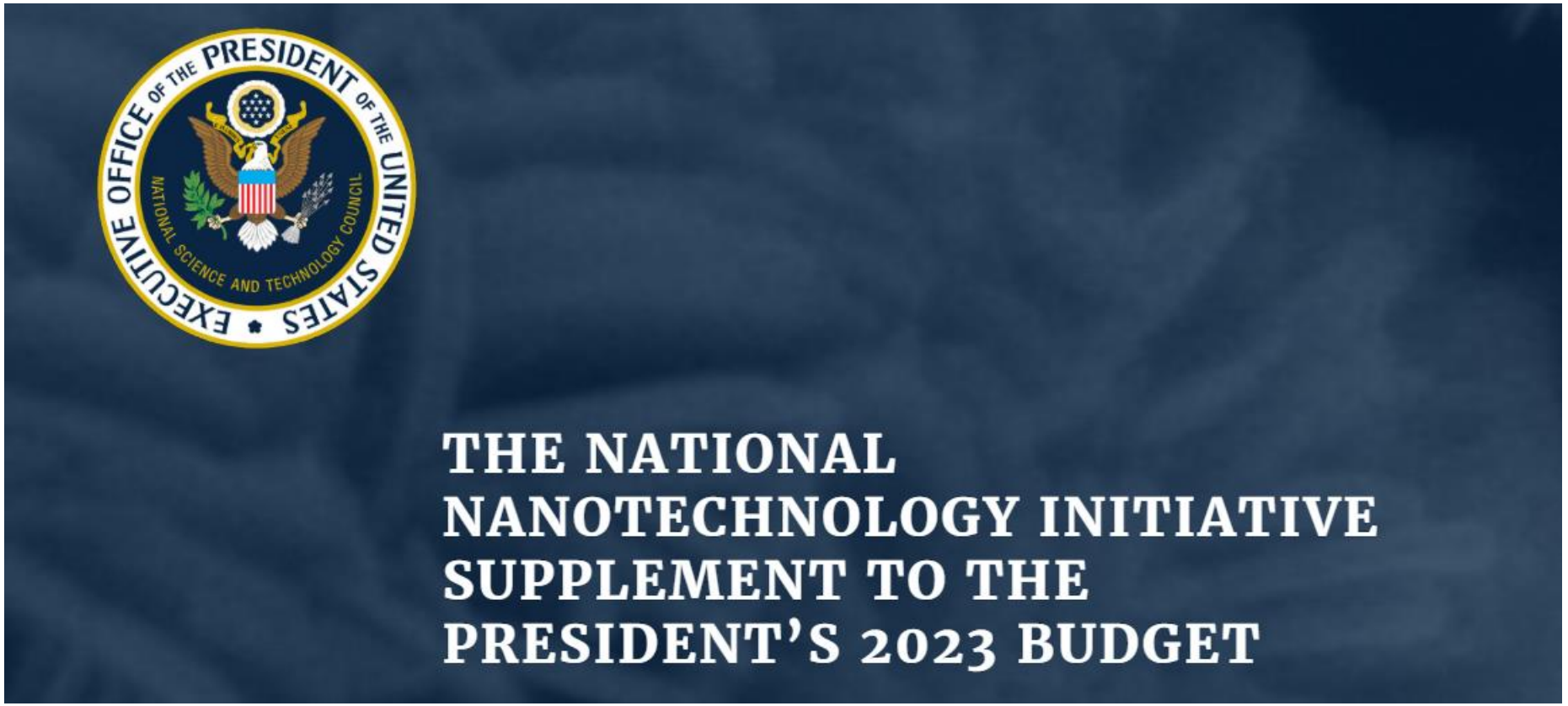
Commission Recommendation of 18 October 2011 on the definition of nanomaterial Text with EEA relevance

OJ L 275, 20.10.2011, p. 38–40 (BG, ES, CS, DA, DE, ET, EL, EN, FR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

2. 'Nanomaterial' means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm.

In specific cases and where warranted by concerns for the environment, health, safety or competitiveness the number size distribution threshold of 50 % may be replaced by a threshold between 1 and 50 %.

https://eur-lex.europa.eu/eli/reco/2011/696/oj



https://www.nano.gov/sites/default/files/pub_resource/NNI-FY23-Budget-Supplement.pdf

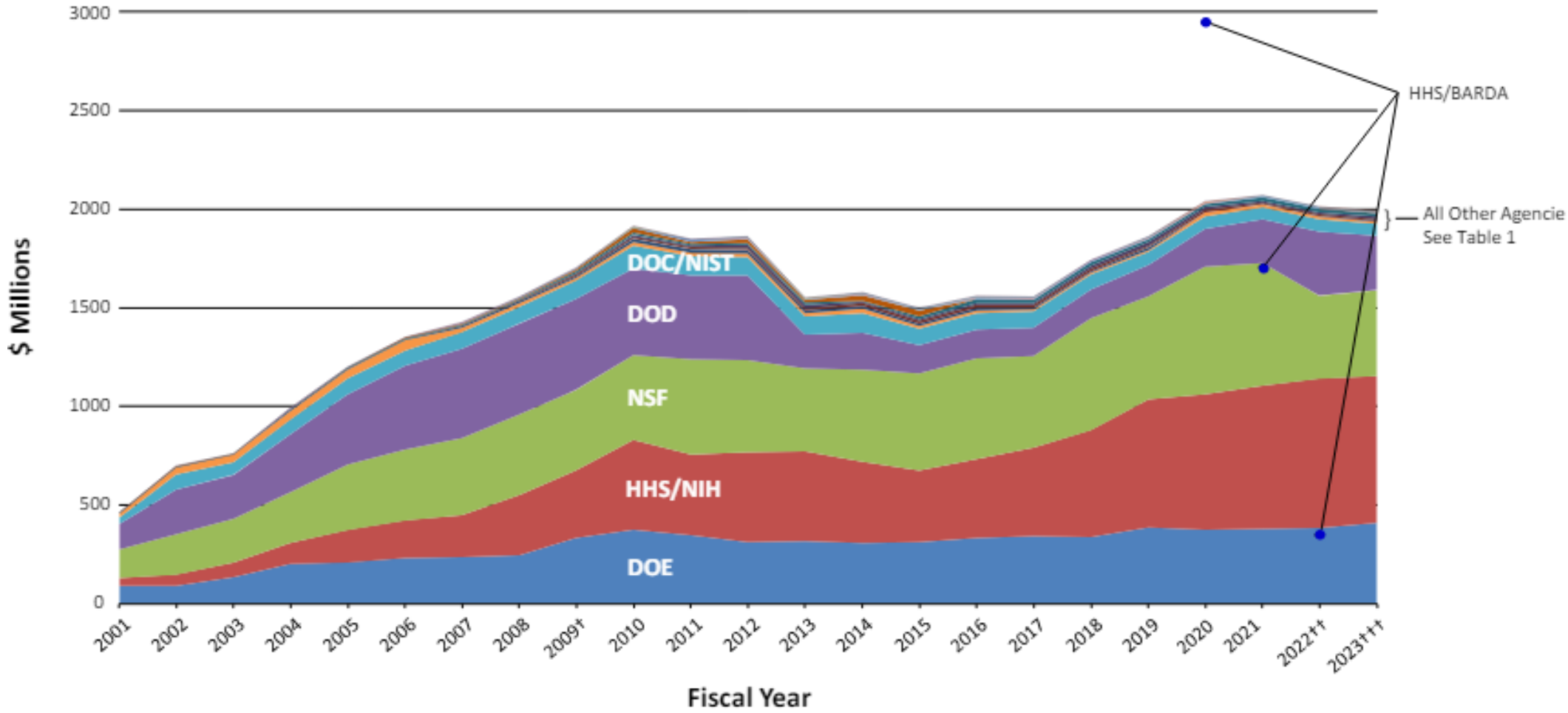


Figure 1. NNI Funding by Agency, 2001–2023.*

* 2021 figures include supplemental funding. BARDA investments (blue dots) not included in line graph totals.

† 2009 figures do not include American Recovery and Reinvestment Act funds for DOE, NSF, NIH, and NIST.

†† 2022 numbers are based on appropriated levels.

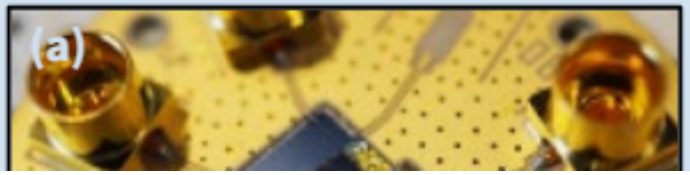
††† 2023 Budget.

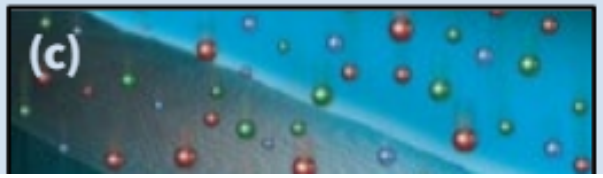
What is Nanotechnology?

Nanotechnology encompasses science, engineering, and technology at the nanoscale, which is about 1 to 100 nanometers. (A nanometer is one-billionth of a meter.) Nanoscale materials can behave differently than the same bulk material. For example, a material's melting point, color, strength, chemical reactivity, and more may change at the nanoscale.

Nanotechnology has broad application across many sectors and underpins areas such as artificial intelligence, quantum information science, and advanced manufacturing. Nanotechnology innovations are ensuring continued U.S. leadership in the semiconductor and strategic computing industries and advancement in many other national priorities, including space exploration, energy, medicine, agriculture, and national security.

Examples of nanotechnology innovations are illustrated below: (a) quantum hardware fabricated using nanomechanical resonators made of lithium niobate; (b) a lipid nanoparticle, which facilitates delivery of messenger RNA (mRNA) in COVID-19 vaccines and many other pharmaceuticals; (c) a silicon nanowire that is shaped at near-atomic scale using a novel electron beam nanofabrication technique; (d) a grease-proof and water-resistant disposable food container made of recyclable cellulose nanocomposites; (e) a graphene oxide foam that filters uranium and other heavy metals from water; (f) a graphene-based electronic tattoo that provides continuous mobile monitoring of blood pressure; and (g) a gas sensor that mimics the sensitivity and selectivity of a human nose using nanoengineered materials.





https://www.nano.gov/sites/default/files/pub_resource/NNI-FY23-Budget-Supplement.pdf

Harnessing bacteria to synthesize high-performance nanomaterials. University researchers funded by NIFA, ONR, and DOE have used genetically engineered bacteria to produce polymeric amyloid fibers that exhibit ultimate tensile strength comparable to the strongest natural spider silk (~1 GPa, stronger than common steel) while displaying higher toughness than natural spider silk (~160 MJ/m^3).

Redesigning the silk sequence by introducing amyloid sequences that have a high tendency to form β-nanocrystals, they were able to induce the bacteria to synthesize a hybrid polymeric amyloid protein with 128 repeating units. The resulting proteins had less repetitive amino acid sequences than spider silk, making them easier for engineered bacteria to produce. The polymeric amyloid proteins can be wet-spun into macroscopic fibers with a wide range of mechanically demanding applications. This strategy for design and biosynthesis of long-protein fibers could be expanded to create numerous other functional materials.[78]

https://www.nano.gov/sites/default/files/pub_resource/NNI-FY23-Budget-Supplement.pdf pagina 36

What Did The National Nanotechnology Initiative Supplement To The Presidents 2023 Budget Say About Polymer Amyloid Spider Silk Production? Could This Have Been Weaponized Against Humanity?

ANA MARIA MIHALCEA, MD, PHD

MAY 14, 2024

https://anamihalceamdphd.substack.com/p/what-did-the-national-nanotechnology?publication_id=956088&post_id=144635193&isFreemail=true&r=1e151k&triedRedirect=true

Figure 2. Nanotechnology is at the core of technology based solutions.

Funding Allocated for Nanotechnology by Various National Funding Agencies

Over the past decade, countries across the globe, including Australia, Canada, Japan, The Netherlands, the affiliated countries of the contributing authors, and many others, have consciously made significant investments in nanotechnology. In the United States, the federal budget for nanotechnology has exceeded $1.8 billion per year for the last 2 years. (8) In Canada, the Natural Sciences and Engineering Research Council (NSERC, the main federal funding agency for STEM disciplines) invested $432 million in nanotechnology between 2010 and 2019. (9) In The Netherlands, the federal government funded NanoNextNL, the national program in nanotechnology: €250 million from 2011 to 2017. (10) In Japan, industries invested ¥106 billion, and universities and national laboratories invested ¥58 billion in 2018, for a total investment of ¥164 billion (US$1.5 billion) in nanotechnology research. (11)

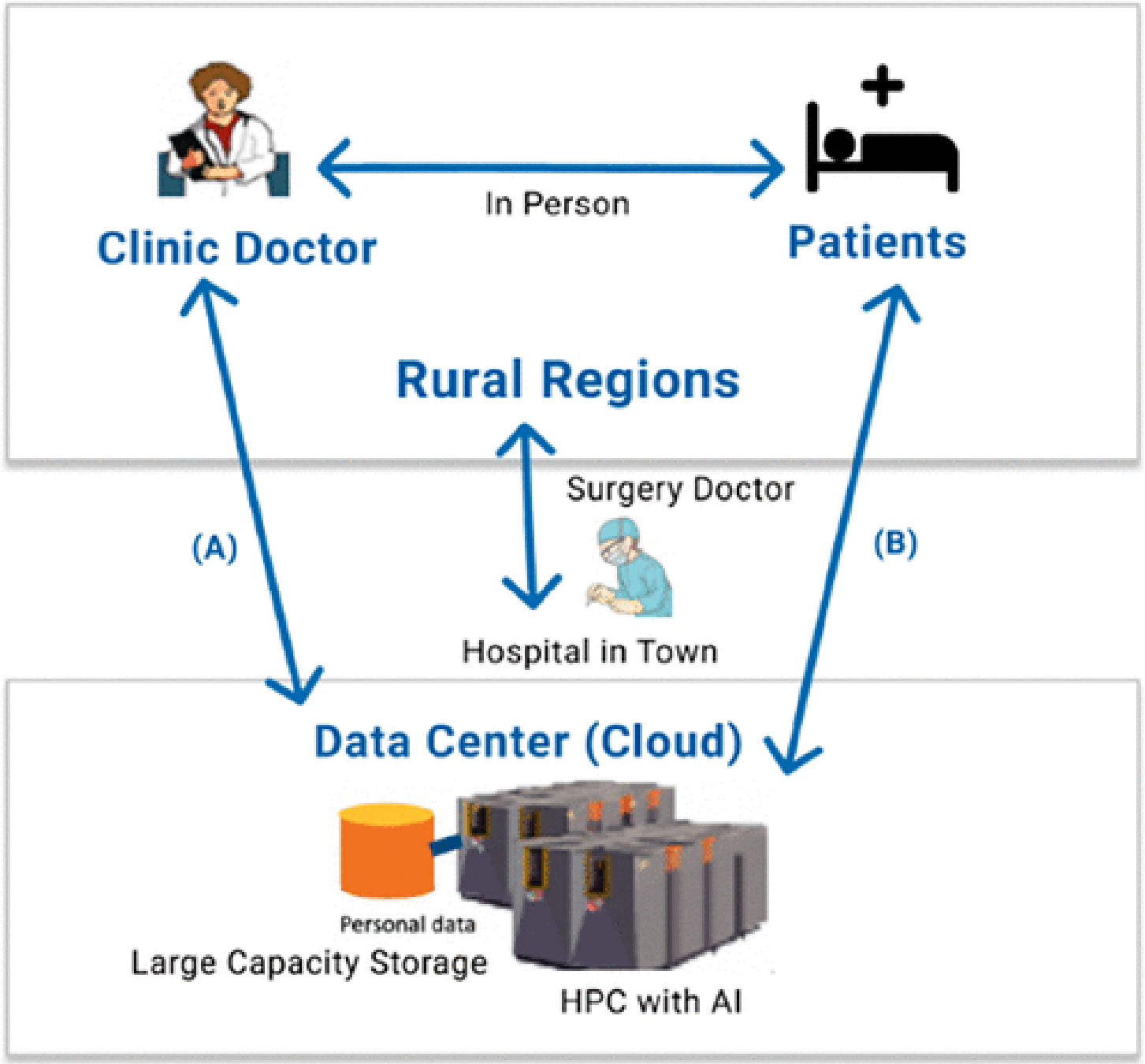
https://pubs.acs.org/doi/10.1021/acsnano.1c10919

Society 5.0

ARTICLE SECTIONS Jump To

Society 5.0 was introduced as a central concept of the fifth Midterm Science, Technology, and Innovation Basic Plan by the Japanese government covering the fiscal years from 2016 to 2020. (14) Society 5.0 is a human-centered society that achieves both economic development and resolution of social issues by sophisticated integration of the cyber world with the physical world, thus contributing to realizing the UN SDGs. We are now ready to achieve Society 5.0 after a long history from the hunter–gatherer society and the agricultural society we once knew, through the industrial society and the information society as shown in Figure 3.

https://pubs.acs.org/doi/10.1021/acsnano.1c10919



Nanotechnology for a Sustainable Future: Addressing Global Challenges with the International Network4Sustainable Nanotechnology - ACS Nano 2021

Remote health and medical care. Complex medical information on patients living in rural regions is collected (A) in the clinic and/or (B) recorded with wearable monitors and transmitted to a data center, such as at a hospital. Automatic medical and health diagnoses are initially carried out almost instantaneously with high-performance computers (HPCs), sometimes with the help of artificial intelligence (AI). An experienced doctor at the hospital in a town will be able to perform a surgery for the patients in rural regions remotely with surgical robots.

https://pubs.acs.org/doi/10.1021/acsnano.1c10919

The European Group on Ethics in Science and New Technologies to the European Commission

Opinion on the ethical aspects of nanomedicine

- Opinion N° 21 -

The European equivalent of the US initiative is the European Framework Programs for Research and Technological Development, which have funding in the order of billions of euros. From the funds allocated for these framework programs for research and technological development, over 1.36 billion EUR (550 funded projects) were allocated for nanotechnology through FP6 (2002-2006), through FP7 (2007 – 2013) approx. 3.5 billions of euros

https://ec.europa.eu/archives/bepa/european-group-ethics/docs/publications/opinion_21_nano_en.pdf

National Nanotechnology Initiative at 20 years: enabling new horizons

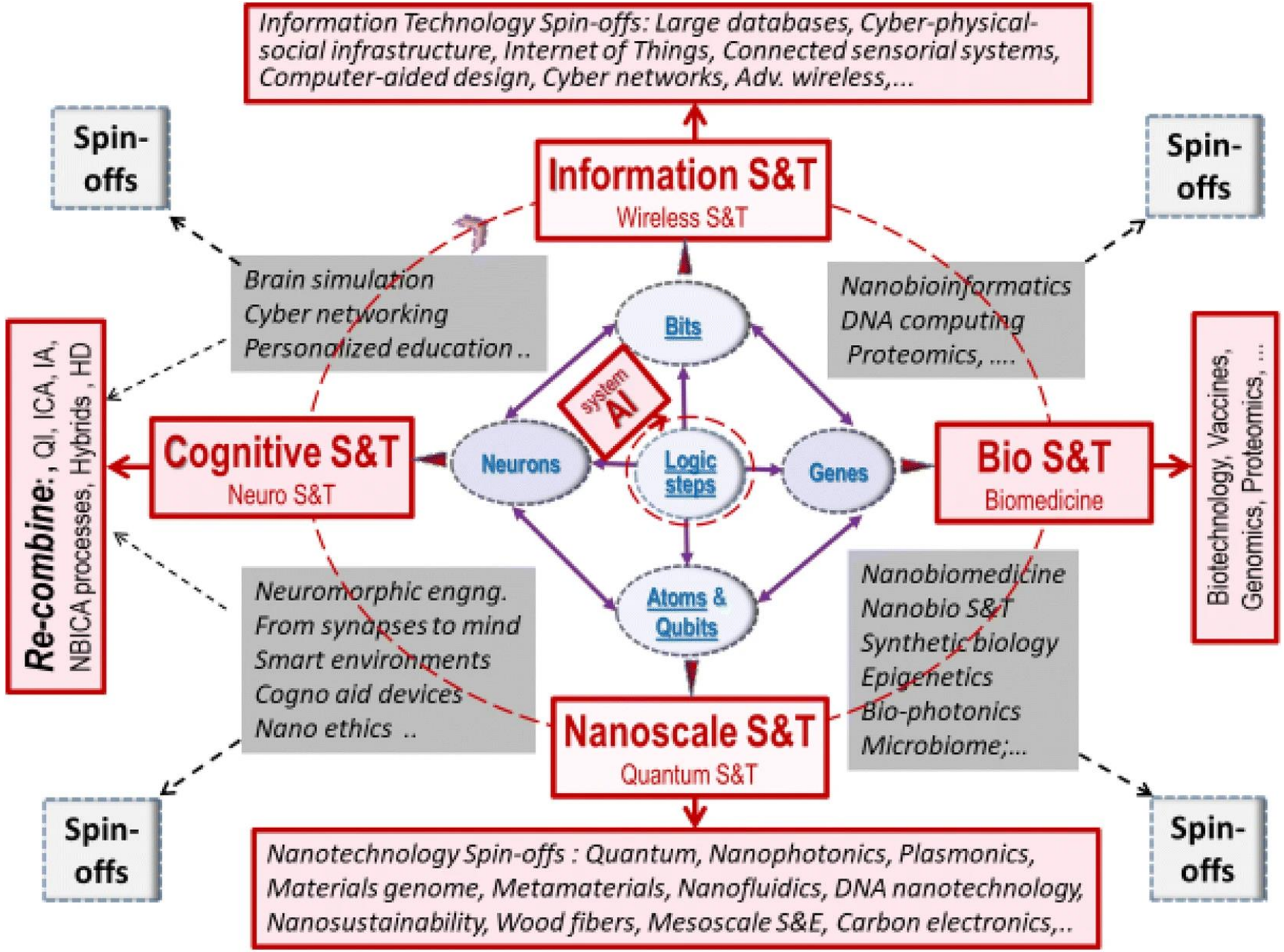
Mihail C. Roco

J Nanopart Res (2023) 25:197

Table 1 Estimated revenues from products where nanotechnology is a condition for competitiveness and corresponding primary nanotechnology workforce (2000–2020): **world** (in bold letters) and the *US* (in italics letters, in parentheses) [15–22]

World (*US*)	People (primary nanotechnology workforce)	Revenues (estimate)
2000 (survey)	**~60,000** *(~25,000)*	**~$30 B** *(~$13 B)*
2010 (survey)	**~660,000** *(~220,000)*	**~$335 B** *(~$110 B)*
2013 (survey)	**~2.38 M** *(~568,000)*	**~$1190 B** *(~$284 B)*
2020 (survey)	**~6 M** *(~1.5 M)*	**~$3000 B** *(~$750 B)*
(2010–2020) average growth	**~25%** *(~21%)*	**~25%** *(~21%)*
(2000–2020) average growth	**~26%** *(~23%)*	**~26%** *(~23%)*

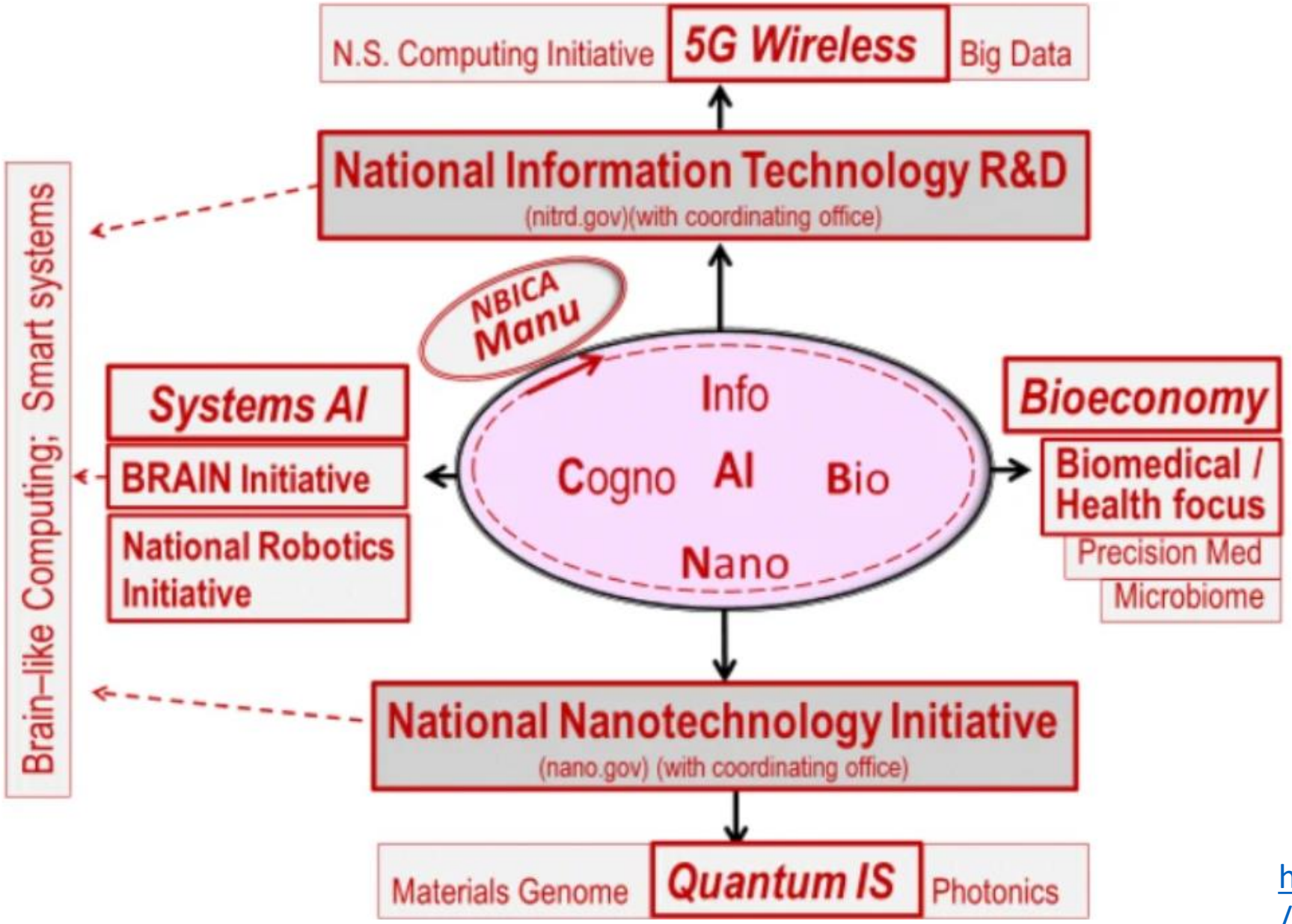
https://nseresearch.org/2023/overviews/MCR_2023-0918_NNI_at_20_years-enabling_new_horizons_JNR_Springer_28p.pdf



Tehnologiile Nano-Bio-Informații-Cognitive

Roco, M.C. Principles of convergence in nature and society and their application: from nanoscale, digits, and logic steps to global progress. J Nanopart Res 22, 321 (2020). https://doi.org/10.1007/s11051-020-05032-0

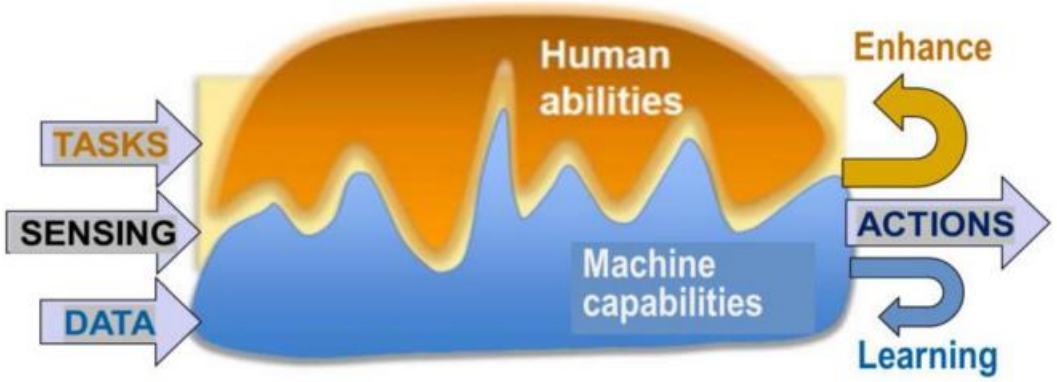
https://link.springer.com/article/10.1007/s11051-020-05032-0#citeas



Roco, M.C. Principles of convergence in nature and society and their application: from nanoscale, digits, and logic steps to global progress. J Nanopart Res 22, 321 (2020). https://doi.org/10.1007/s11051-020-05032-0

https://link.springer.com/article/10.1007/s11051-020-05032-0#citeas

Fig. 24 Schematic for Intelligent Cognitive Assistants



https://link.springer.com/article/10.1007/s11051-020-05032-0#citeas

- "ICAs are harnessing new machine intelligence and problem-solving capabilities to work collaboratively and enhance human cognitive and physical abilities—by assisting in working, learning, and interacting with new cyber-physical systems, transport, healthcare, and other activities. ICAs are conceived to be smart interfaces between an individual or group with other people, with the surrounding environment, and with tools and machineries."
- "Typical ICA functions are improving daily activities through human-machine collaborative work, learning machines, exploring things not possible before, and overall enhancing human abilities. Goals for ICAs include learning insights from data, solving unfamiliar problems, creating decision and action capabilities, and providing informed advice. They are at the confluence of IT-computer science, brain science, cognitive technologies, and nanotechnology."

National Science and Technology Council
Committee on Technology
Interagency Working Group on Nanoscience, Engineering and Technology (IWGN)

Nanotechnology Research Directions:
IWGN Workshop Report

Vision for Nanotechnology R&D in the Next Decade

SEPTEMBER 1999

https://www.nano.gov/sites/default/files/IWGN_rd.pdf

There are numerous other potential applications of nanoscience to biology:

- Rapid, efficient genome sequencing, revolutionizing diagnostics and therapeutics
- Effective and less expensive healthcare using remote and in-vivo devices
- New formulations and routes for drug delivery that enormously broaden their therapeutic potential by effecting delivery of new types of medicine to previously inaccessible sites in the body
- More durable, rejection-resistant artificial tissues and organs
- Sensor systems that detect emerging disease in the body, which will shift the focus of patient care from disease treatment to early detection and prevention

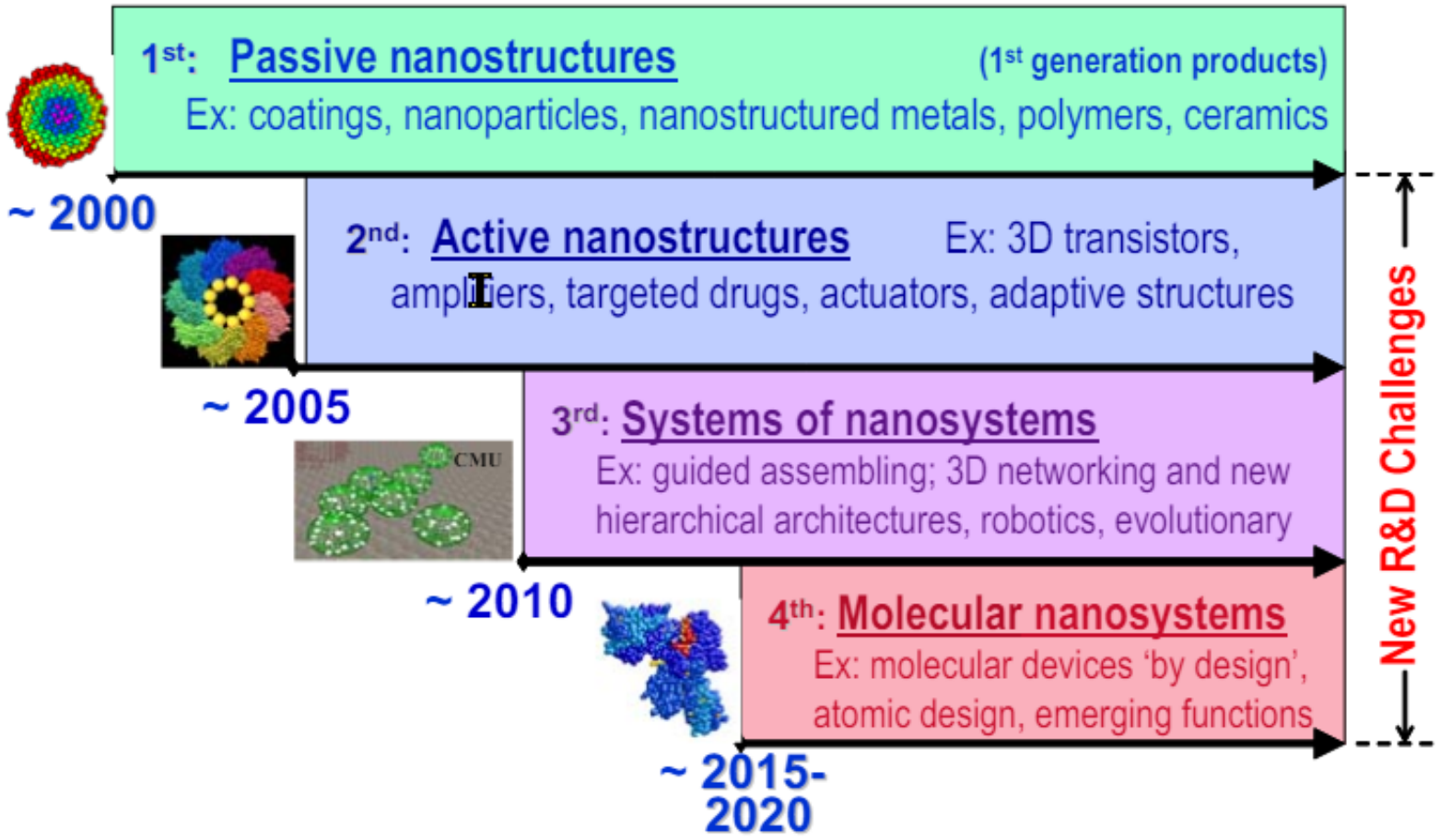


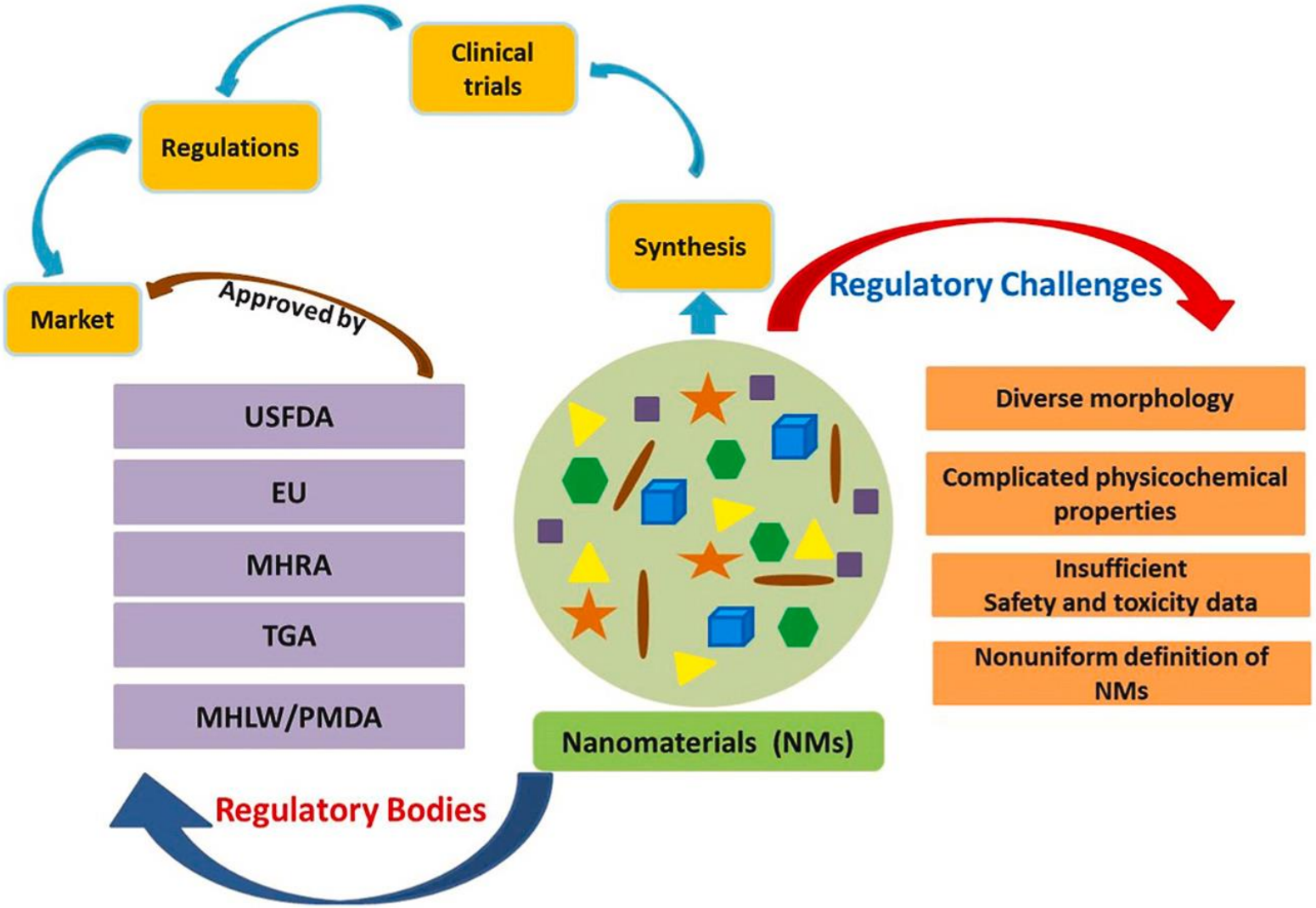
Figure 1. Four generations of products: timeline for beginning of industrial prototyping and nanotechnology commercialization

Journal of Nanoparticle Research, 2005, Vol. 7(6).
Report
International Perspective on Government Nanotechnology Funding in 2005
M.C. Roco,

https://web.archive.org/web/20120131175645/http:/nsf.gov/crssprgm/nano/reports/mcr_05-0526_intpersp_nano.pdf

Current regulatory landscape of nanomaterials and nanomedicines: A global perspective

Faraat Ali, Journal of Drug Delivery Science and Technology, Volume 80, 2023



https://ars.els-cdn.com/content/image/1-s2.0-S1773224722010292-ga1_lrg.jpg

NTc is an area where products are developing faster than regulation.

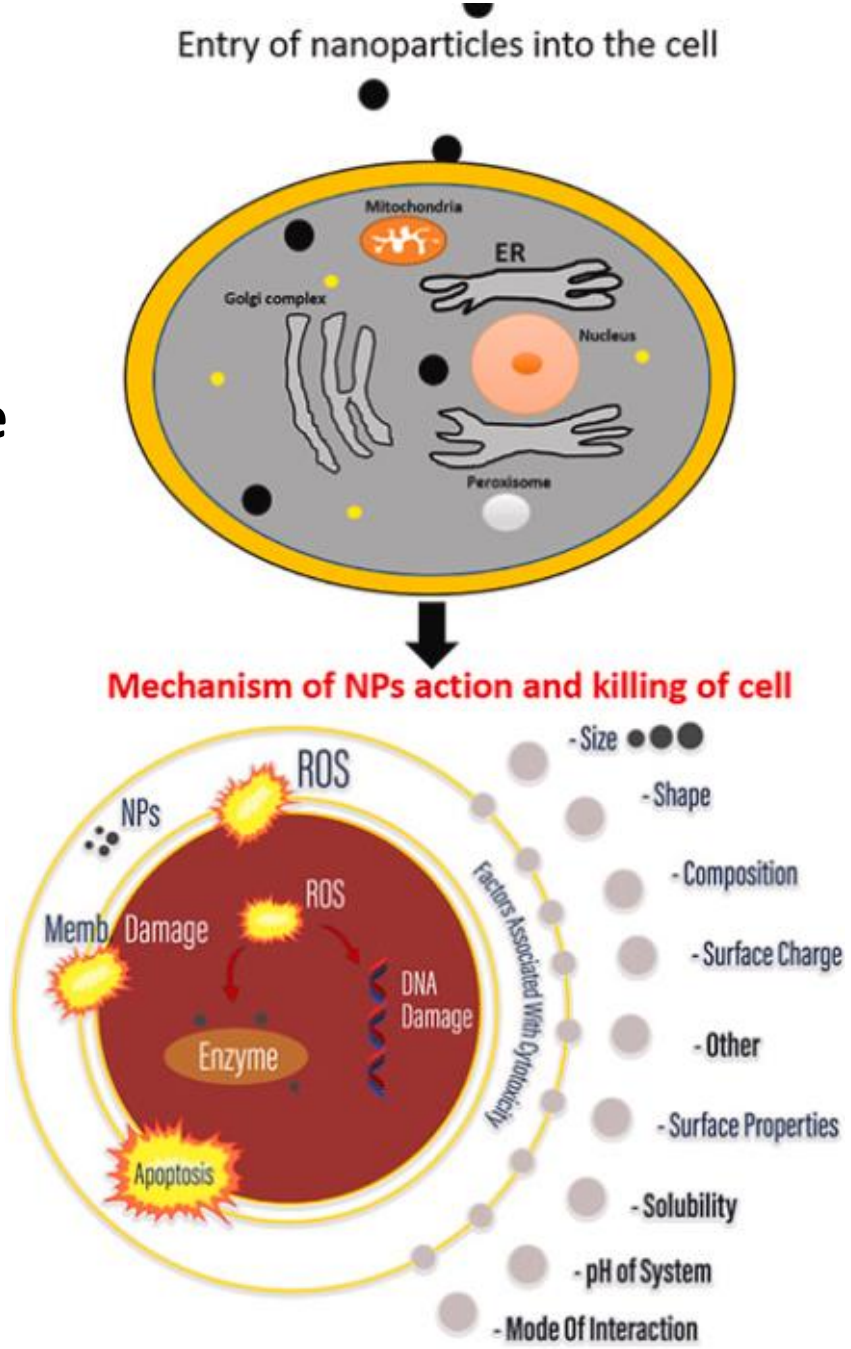
This is due to the complexity of specific nanomaterials (NMs) and nanomedicines (NMc), the lack of an internationally standardized regulatory framework, and regulatory differences worldwide. Most available NMcs function by interacting at the biomolecular level with cellular components and genetic material. This could have both positive beneficial therapeutic effects and **negative effects such as genotoxicity.**

Pranjali Mahamuni-Badiger

“Challenges and toxicity assessment of inorganic nanomaterials in biomedical applications: Current status and future roadmaps”,

Journal of Drug Delivery Science and Technology, Volume 87, 2023, 104806, ISSN 1773-2247, https://doi.org/10.1016/j.jddst.2023.104806 .

https://www.sciencedirect.com/science/article/abs/pii/S1773224723006585



“Existența unor interacțiuni complicate între NM și sistemele biologice arată că nu există un mecanism universal de toxicitate sau o metodă de evaluare pentru NM.”

“Chiar dacă nanomedicina este un domeniu benefic și inovator, creează o majoritate de amenințări pentru mediu și sănătate prin nanotoxicitate.”

“Din păcate, nu există metode standardizate pentru determinarea citotoxicității diferitelor NM. “

Med Pharm Rep. 2020 Oct; 93(4): 342–350.
PMCID: PMC7664725
Published online 2020 Oct 25. doi: 10.15386/mpr-1756
PMID: 33225259

A review of the current understanding of nanoparticles protein corona composition

Pranvera Breznica,[1] Rozafa Koliqi,[2] and Arlinda Daka[2]

Abstract

Go to:

Upon entering into the biological environments, the surface of the nanoparticles is immediately coated with proteins and form the so-called a protein corona due to which a nanoparticle changes its "synthetic" identity to a new "biological" identity. Different types of nanoparticles have different protein binding profiles, which is why they have different protein corona composition and therefore it cannot be said that there is a universal protein corona. The composition and amount of protein in the corona depends on the physical and chemical characteristics of the nanoparticles, the type of biological medium and the exposure time. Protein corona increases the diameter but also changes the composition of the surface of the nanoparticles and these changes affect biodistribution, efficacy, and toxicity of the nanoparticles.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7664725/

"Nanomedicine can revolutionise the way we detect and treat diseases of the human body. In order to ensure their safety, quality and efficacy, it is therefore **essential that a robust regulatory process exists and that all stakeholders, including health authorities, payers, pharmacists and prescribers are fully aware of their complexities**. **Transparency, including openness about uncertainties and knowledge gaps in these technologies, is of the essence to achieve public trust in nanomedicine.** The work carried out by the EAASM aims to help catalyse this and we wish them every success with their patient safety initiatives."

Maria da Graça Carvalho
Member of the European Parliament

https://eunanomedicinescoalition.eu/wp-content/uploads/2020/09/Patient-Safety-and-Nanomedicines-September-2020.pdf

The Parliament

OPINION | BOOKS & CULTURE | FEATURES | INTERVIEWS | PARTNER CONTENT | PRINT MAGAZ

By **Petar Vitanov**

Petar Vitanov (BG, S&D) is a member of the European Parliament's Environment, Public Health and Food Safety Committee

26 Jul 2021

Nanomedicines and Nanosimilars: Building a robust legislative framework

The EU has the chance to lead the world in developing a centralised regulatory procedure for nanomedicines and nanosimilars, argues Petar Vitanov

"Nanomedicines offer potential solutions for a number of current treatment challenges, including cancer, cardiovascular and neurodegenerative disorders, as well as other diseases. **It is also important to note that the innovative mRNA vaccines contain nanoparticles**."

"Assembling different chemical parts into complex nanoparticles requires highly standardised and complex manufacturing processes that can guarantee consistent quality, clinical effectiveness and safety.

Changes in quality, size distribution, surface properties, drug loading and release profiles, aggregation status and stability can alter how a nanomedicine acts within the body with a significant impact on patient safety and efficacy."

"This was highlighted in a recent EAASM scientific report which makes key recommendations to ensure patient safety and enable the EU to fully harness the potential of nanotechnology.
The report **calls for the development of a scientific consensus on definitions for nanomedicines in Europe**, improving education and fostering awareness on the complexity and sophistication of nanomedicines among policy makers, prescribers, payers and patients.
It also **advocates adopting a European Medicines Agency (EMA) centralised procedure for all nanomedicines and nanosimilars which would ensure greater scrutiny of these complex products**."

https://www.theparliamentmagazine.eu/news/article/nanomedicines-and-nanosimilars-building-a-robust-legislative-framework

ANNEX I

SUMMARY OF PRODUCT CHARACTERISTICS

Mechanism of action

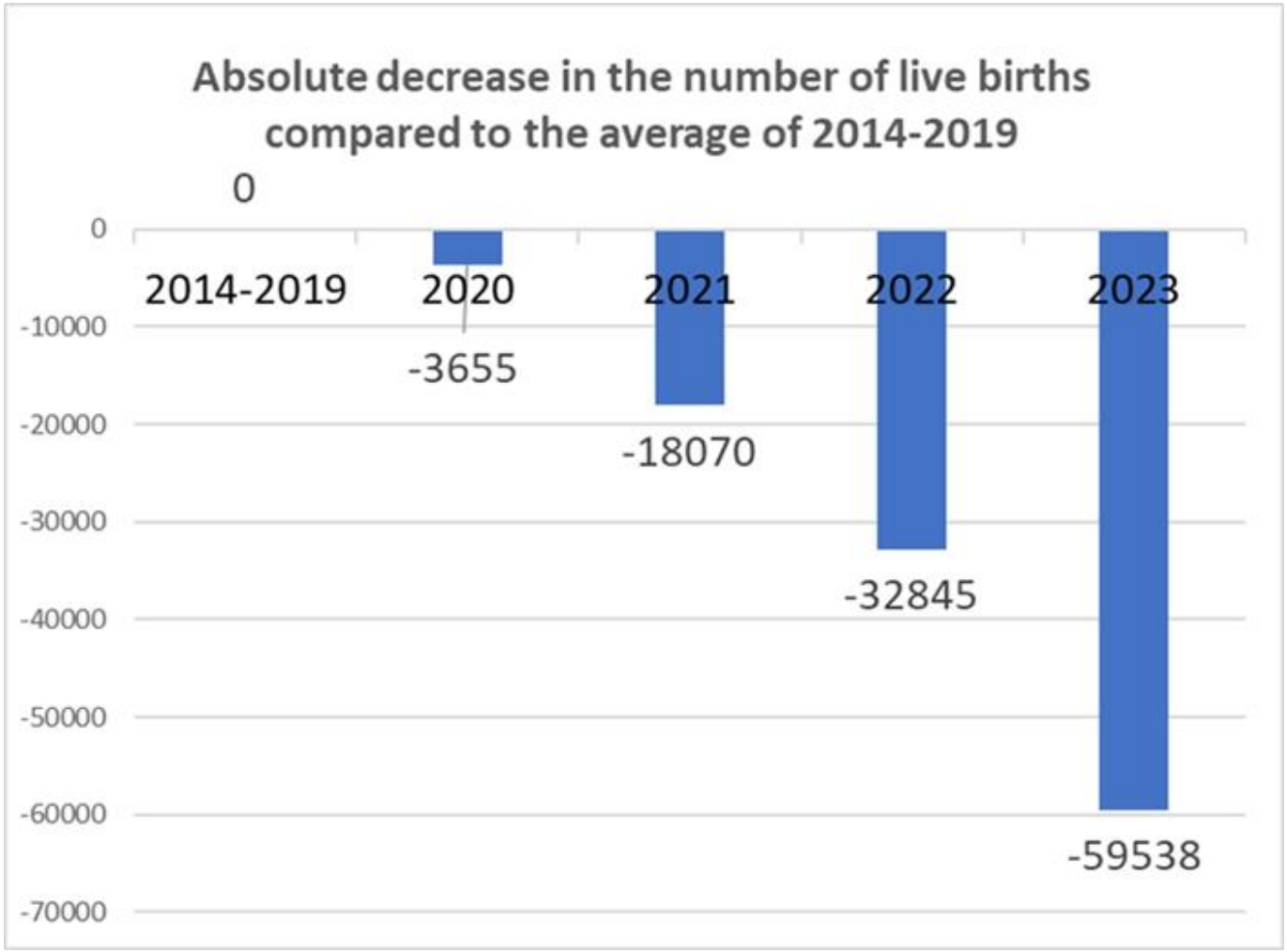
The nucleoside-modified messenger RNA in Comirnaty is formulated in lipid nanoparticles, which enable delivery of the non-replicating RNA into host cells to direct transient expression of the SARS-CoV-2 S antigen. The mRNA codes for membrane-anchored, full-length S with two point mutations within the central helix. Mutation of these two amino acids to proline locks S in an antigenically preferred prefusion conformation. The vaccine elicits both neutralizing antibody and cellular immune responses to the spike (S) antigen, which may contribute to protection against COVID-19.

Genotoxicity/Carcinogenicity

Neither genotoxicity nor carcinogenicity studies were performed. The components of the vaccine (lipids and mRNA) are not expected to have genotoxic potential.

https://www.ema.europa.eu/en/documents/product-information/comirnaty-epar-product-information_en.pdf

The absolute decrease in the number of births in Romania between the years 2020-2023 compared to the average of the years 2014-1019



https://insse.ro/cms/sites/default/files/field/publicatii/evenimente_demografice_in_anul_2022.pdf

The absolute and percentage decrease in the number of births in Romania between the years 2020-2023 compared to the average of the years 2014-1019

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Live births	**202501**	**206190**	**209641**	**214928**	**214614**	**215467**	**211273**	**196858**	**182083**	**155390**
Absolute decrease in the number of live births compared to the average of 2014-2019	**Annual average of live births between 2014-2019: 214928**						**-3655**	**-18070**	**-32845**	**- 59538**
Percentage decrease in the number of live births compared to the average of 2014-2019							**-1,7%**	**-8,4%**	**-15.28%**	**- 27,70%**

https://insse.ro/cms/sites/default/files/com_presa/anexa_date/pop12r23.xls

Molecules. 2018 Jul; 23(7): 1766.
Published online 2018 Jul 18. doi: 10.3390/molecules23071766
PMCID: PMC6099981
PMID: 30022011

DNA Origami Nanomachines

Masayuki Endo* and Hiroshi Sugiyama*

Abstract

Go to:

DNA can assemble various molecules and nanomaterials in a programmed fashion and is a powerful tool in the nanotechnology and biology research fields. DNA also allows the construction of desired nanoscale structures via the design of DNA sequences. Structural nanotechnology, especially DNA origami, is widely used to design and create functionalized nanostructures and devices. In addition, DNA molecular machines have been created and are operated by specific DNA strands and external stimuli to perform linear, rotational, and reciprocating movements. Furthermore, complicated molecular systems have been created on DNA nanostructures by arranging multiple molecules and molecular machines precisely to mimic biological systems. Currently, DNA nanomachines, such as molecular motors, are operated on DNA nanostructures. Dynamic DNA nanostructures that have a mechanically controllable system have also been developed. In this review, we describe recent research on new DNA nanomachines and nanosystems that were built on designed DNA nanostructures.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6099981/

Pfizer Press release | Partnering release | Partnerships

Bar Ilan University to work with Pfizer Inc. to evaluate drug delivery via DNA Nanorobots

Thursday, May 14, 2015 - 08:00am

BIRAD – Bar Ilan University Research and Development Company Ltd. (BIRAD), and the bio□design lab headed by Dr. Ido Bachelet at Bar Ilan University, announced that BIRAD has entered into an evaluation agreement with Pfizer Inc. This agreement is focused on gaining a better understanding into DNA nanorobots as potential carriers of different proteins for possible new treatments. The terms of the agreement were not disclosed.

https://www.pfizer.com/news/press-release/press-release-detail/bar-ilan-university-work-pfizer-inc-evaluate-drug-delivery

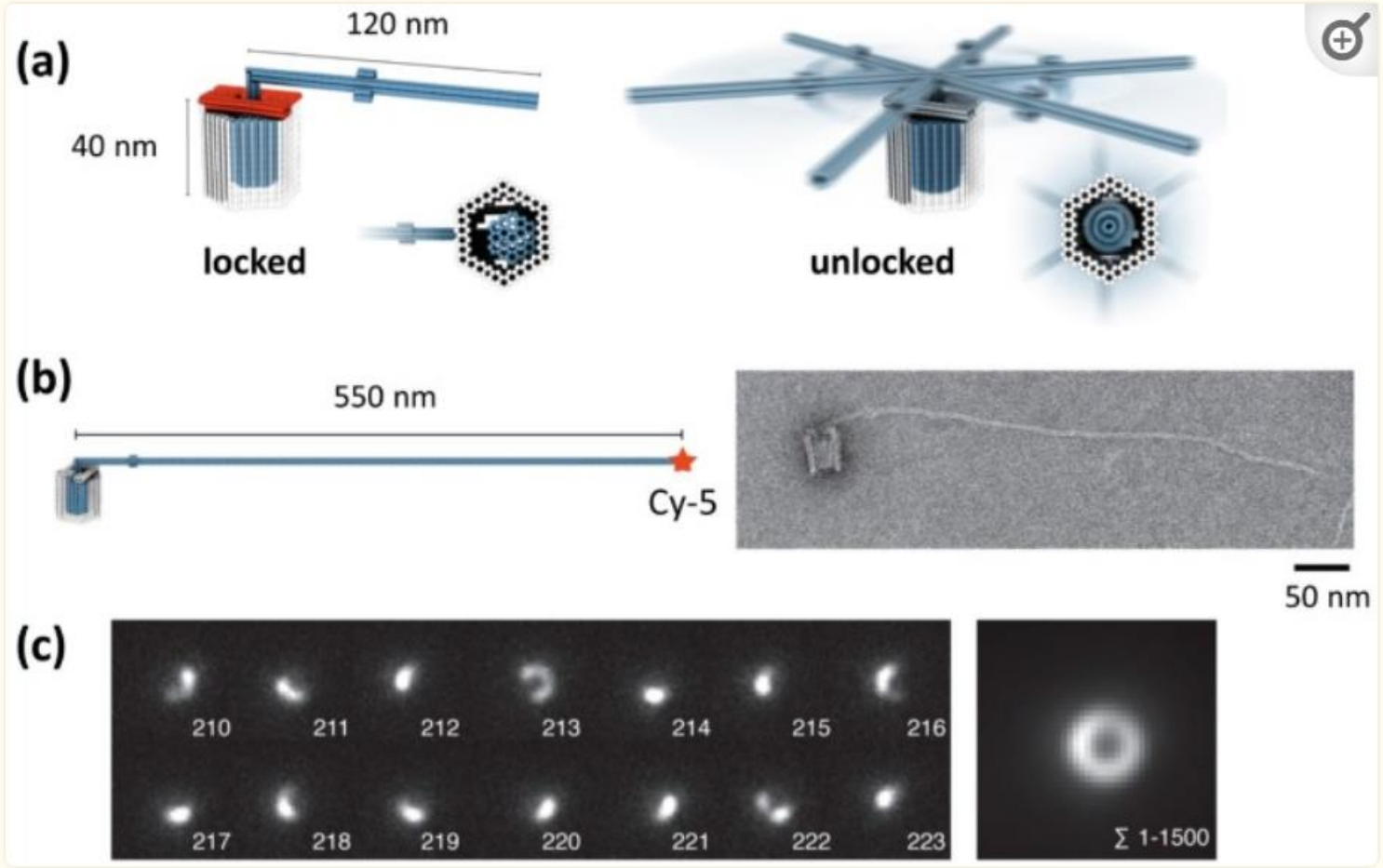


Figure 5

DNA-based rotary apparatus [32]. (**a**) Design of assembled rotor apparatus with closed brackets (red) and a locked rotor (blue) (left). Assembled rotary motor apparatus with a mobile rotor (right). (**b**) Rotary apparatus with a 550 nm crank lever for observation of rotary movement. TEM image of the construct. (**c**) Observation of rotary movement of single apparatus acquired by TIRF microscopy (left) and sum over all 1500 images (right).

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6099981/

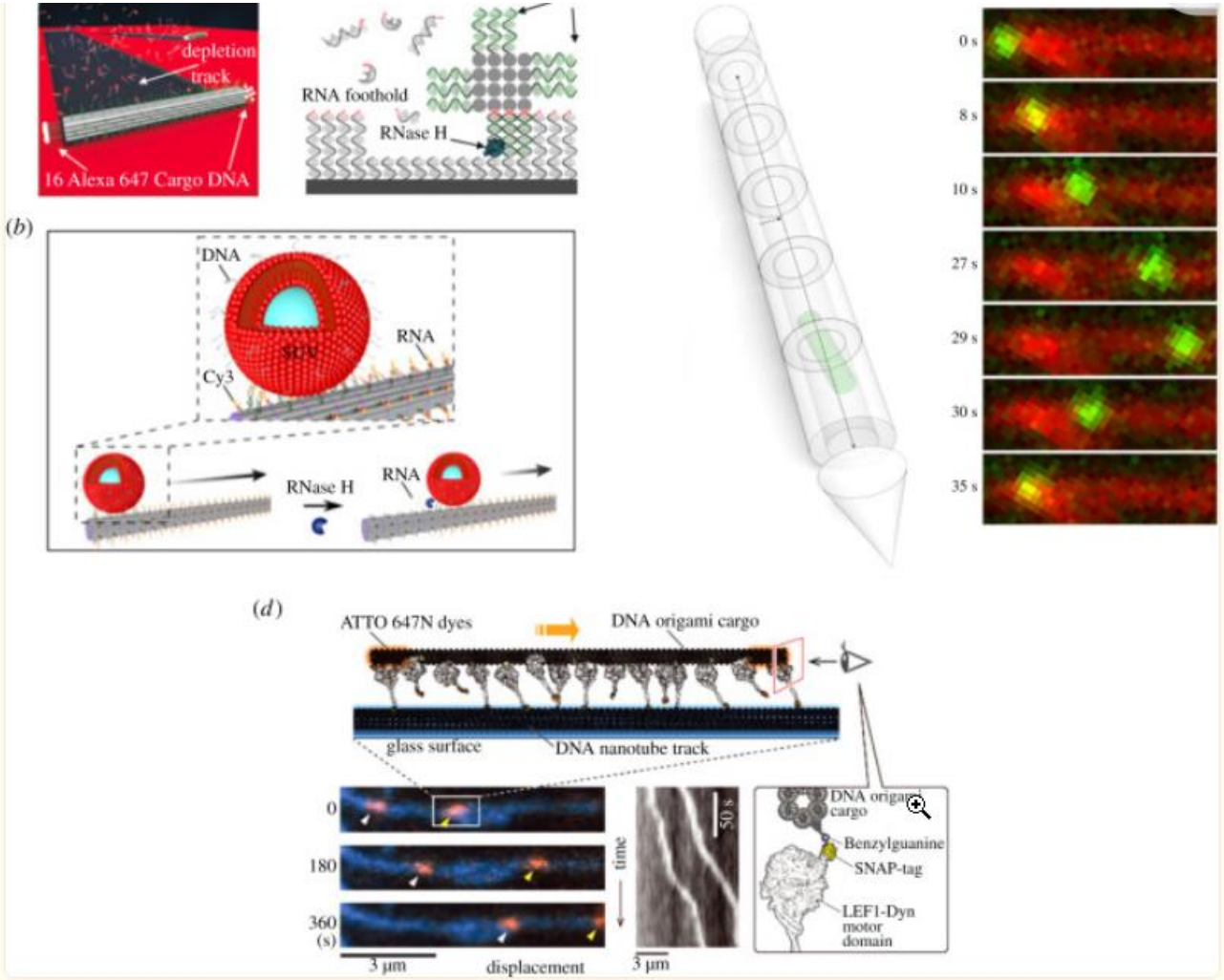


Figure 5.

Cargo transport with DNA nanotechnology. (*a*) DNA origami roll along a surface using an RNase H-mediated burnt-bridge mechanism [70]. (*b*) The same mechanism can be used for the autonomous transport of SUVs along DNA nanotubes [47]. (*c*) DNA origami transport system using electric fields [71]. (*d*) Engineered protein motors on DNA nanotubes move DNA origami cargo [72].

Jahnke K, Göpfrich K.
Engineering DNA-based cytoskeletons for synthetic cells.
Interface Focus. 2023 Aug 11;13(5):20230028. doi: 10.1098/rsfs.2023.0028. PMID: 37577007; PMCID: PMC10415745.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10415745/

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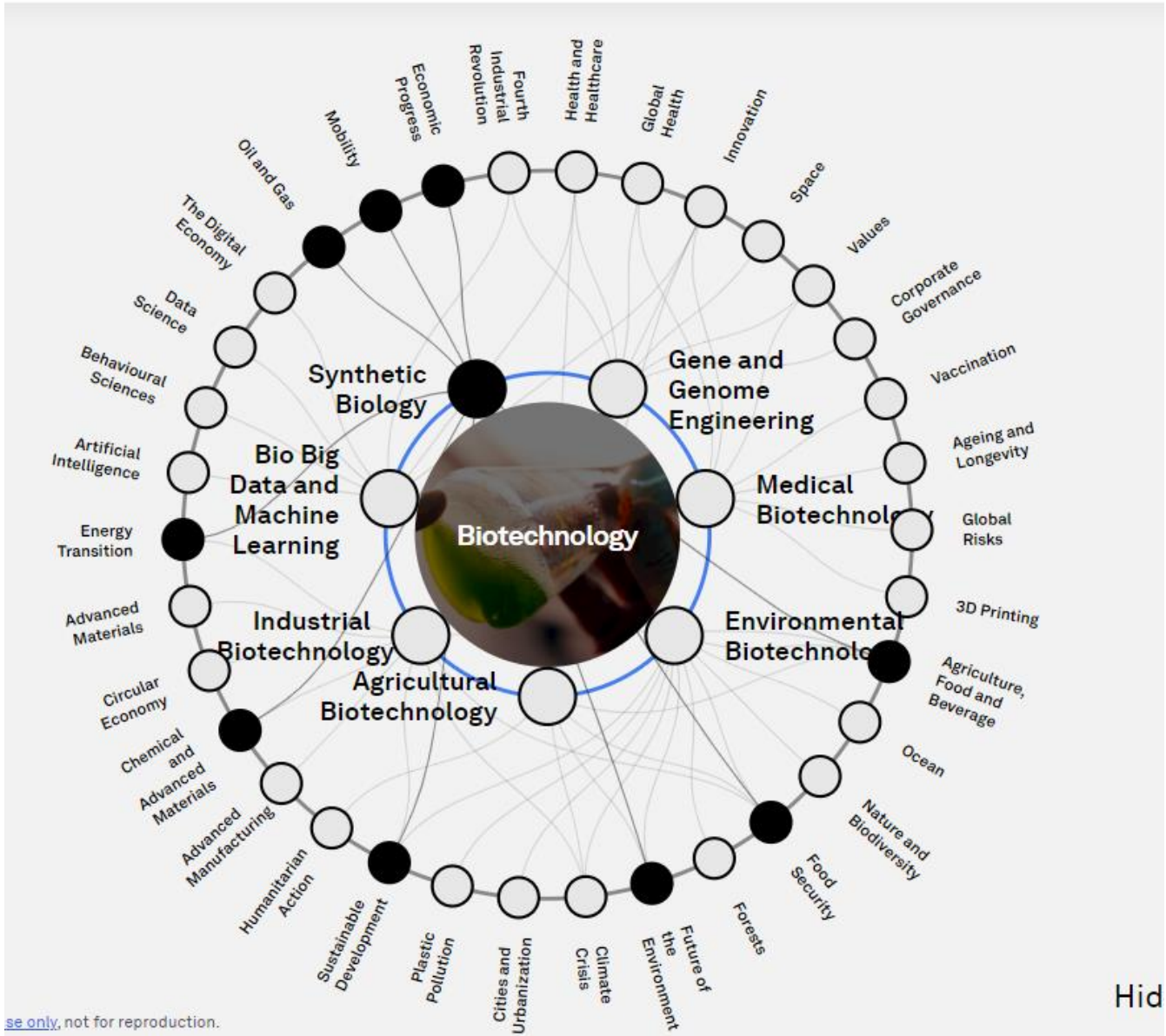

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https://intelligence.weforum.org/topics/a1Gb0000001j9vlEAA/key-issues/a1Gb0000001kKkREAU

Micromachines (Basel). 2022 Feb; 13(2): 164.
Published online 2022 Jan 22. doi: 10.3390/mi13020164
PMCID: PMC8875460
PMID: 35208289

Microelectromechanical Systems (MEMS) for Biomedical Applications

Cristina Chircov[1,2] and Alexandru Mihai Grumezescu[1,2,3,4,*]

Han Zhang, Academic Editor, Jing Dai, Academic Editor, Wen Zhang, Academic Editor, Renny Edwin Fernandez, Academic Editor, and Nebras Sobahi, Academic Editor

Abstract

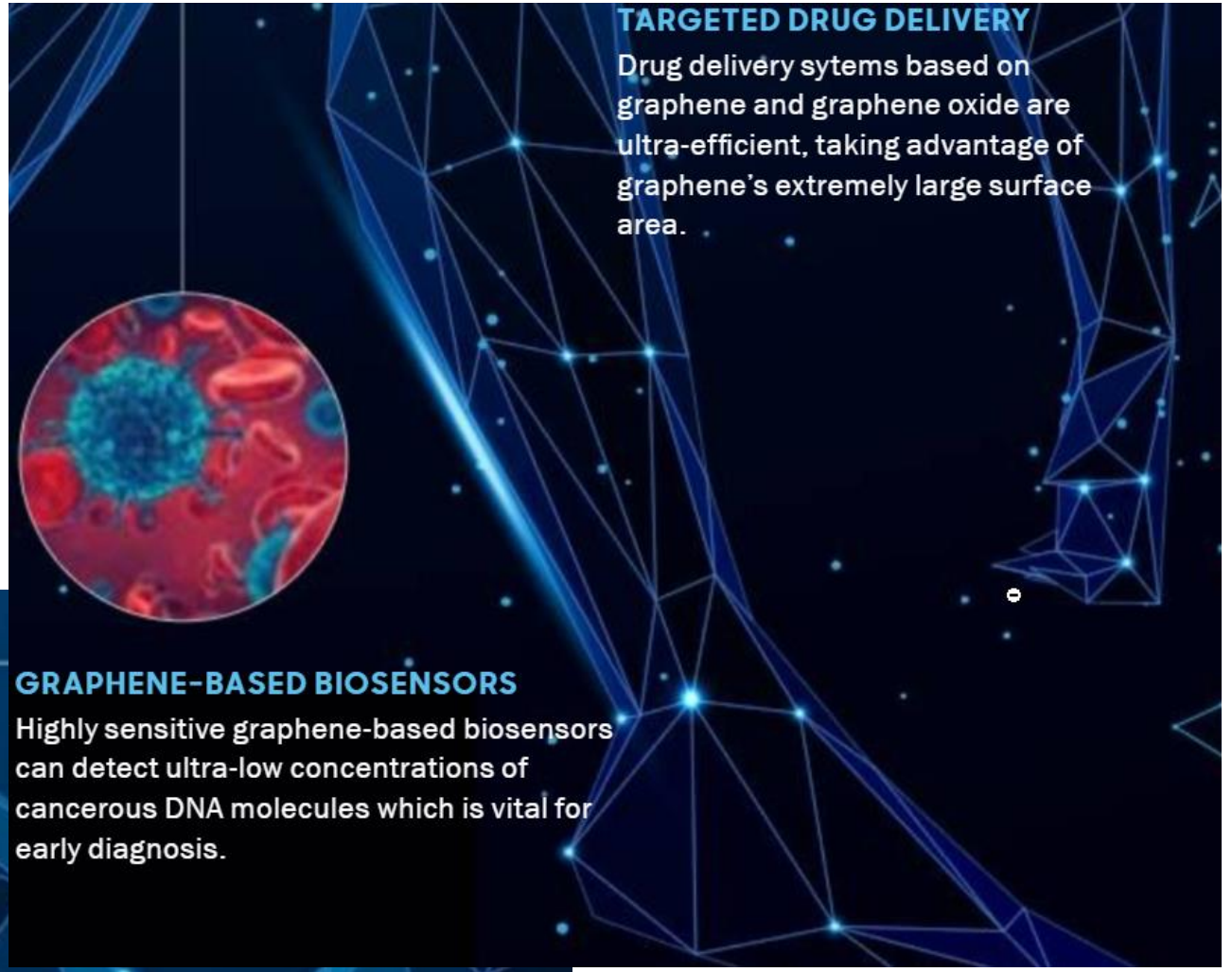
Go to:

The significant advancements within the electronics miniaturization field have shifted the scientific interest towards a new class of precision devices, namely microelectromechanical systems (MEMS). Specifically, MEMS refers to microscaled precision devices generally produced through micromachining techniques that combine mechanical and electrical components for fulfilling tasks normally carried out by macroscopic systems. Although their presence is found throughout all the aspects of daily life, recent years have witnessed countless research works involving the application of MEMS within the biomedical field, especially in drug synthesis and delivery, microsurgery, microtherapy, diagnostics and prevention, artificial organs, genome synthesis and sequencing, and cell manipulation and characterization. Their tremendous potential resides in the advantages offered by their reduced size, including ease of integration, lightweight, low power consumption, high resonance frequency, the possibility of integration with electrical or electronic circuits, reduced

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8875460/

HUMAN OF THE FUTURE

Graphene-enabled technology expands the realm of possibility within the biomedical and wearable electronics sectors.



TARGETED DRUG DELIVERY

Drug delivery sytems based on graphene and graphene oxide are ultra-efficient, taking advantage of graphene's extremely large surface area.

GRAPHENE-BASED BIOSENSORS

Highly sensitive graphene-based biosensors can detect ultra-low concentrations of cancerous DNA molecules which is vital for early diagnosis.

BRAIN-MACHINE INTERFACES

Flexible graphene can be used in neural implants which record and stimulate signals on the surface of the brain improving the understanding, treatment, and detection of neural diseases.

https://graphene.azurewebsites.net/Graphene-Magazine-2020-2/#page=14

ACS Energy Letters

http://pubs.acs.org/journal/aelccp

EDITORIAL

2023 Nobel Prize in Chemistry: A Mega Recognition for Nanosized Quantum Dots

Cite This: *ACS Energy Lett.* 2023, 8, 5149–5151

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The scientific community of nanoscience, material science, and energy disciplines celebrated with elation this year's announcement of the Nobel Prize in Chemistry. A long-awaited recognition for nanosized semiconductor quantum dots brought joy and excitement as the 2023 Nobel Prize in Chemistry was awarded to the pioneers Moungi G. Bawendi, Luis E. Brus, and Alexi I. Ekimov, "*for the discovery and synthesis of quantum dots*" (Figure 1).[1] The semiconductor quantum dot journey started 40 years ago when Ekimov reported size quantization effects in CuCl embedded in glass (1981).[2] During the same period, Luis Brus prepared colloidal CdS suspensions (1982),[3] which was followed by the demonstration of size quantization effects (1983).[4] Several other research groups also championed demonstrating particle

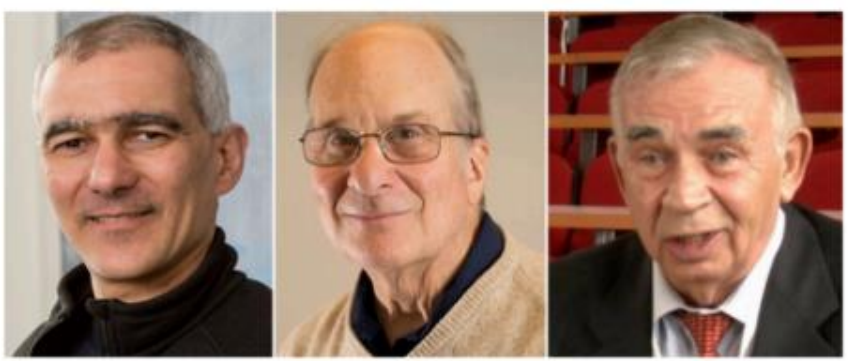

Figure 1. Moungi Bawendi of MIT (left), Louis Brus of Columbia University (center), and Alexei Ekimov of Nanocrystals Technology Inc. (right). Reproduced from *C&E News*, October 4, 2023, with Credit: MIT (Bawendi); Columbia University (Brus); Nexdot

https://pubs.acs.org/doi/pdf/10.1021/acsenergylett.3c02390

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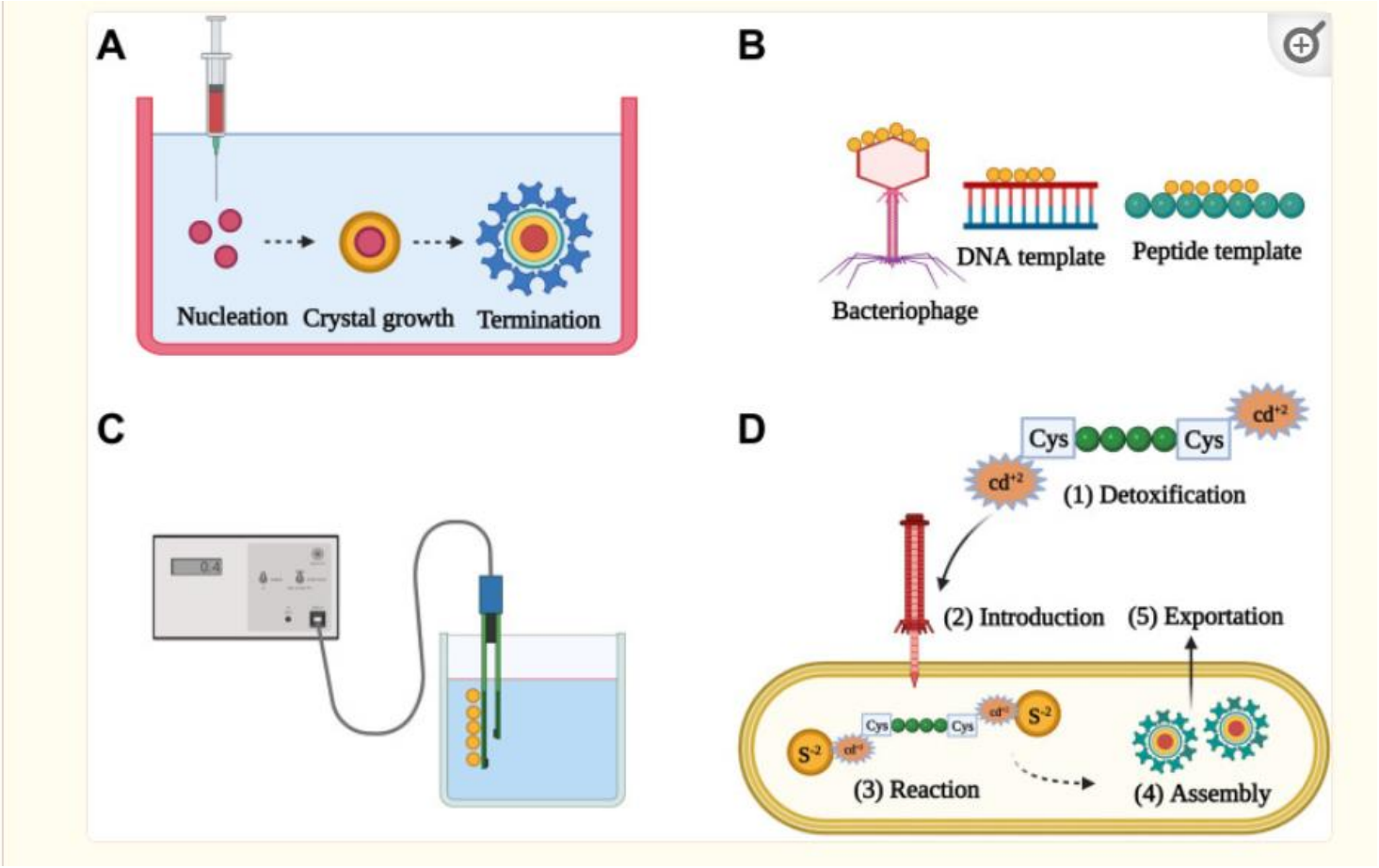
International Journal of Nanomedicine
Dove Medical Press | This Article | Suscribe | Submit a Manuscript | Search | Follow

Int J Nanomedicine. 2022; 17: 1951–1970.
Published online 2022 May 2. doi: 10.2147/IJN.S357980
PMCID: PMC9076002
PMID: 35530976

Biomedical Applications of Quantum Dots: Overview, Challenges, and Clinical Potential

Ahmed A H Abdellatif, [1,2] Mahmoud A Younis, [3] Mansour Alsharidah, [4] Osamah Al Rugaie, [5] and Hesham M Tawfeek [3]



Some commonly-used methods for the preparation of QDs.

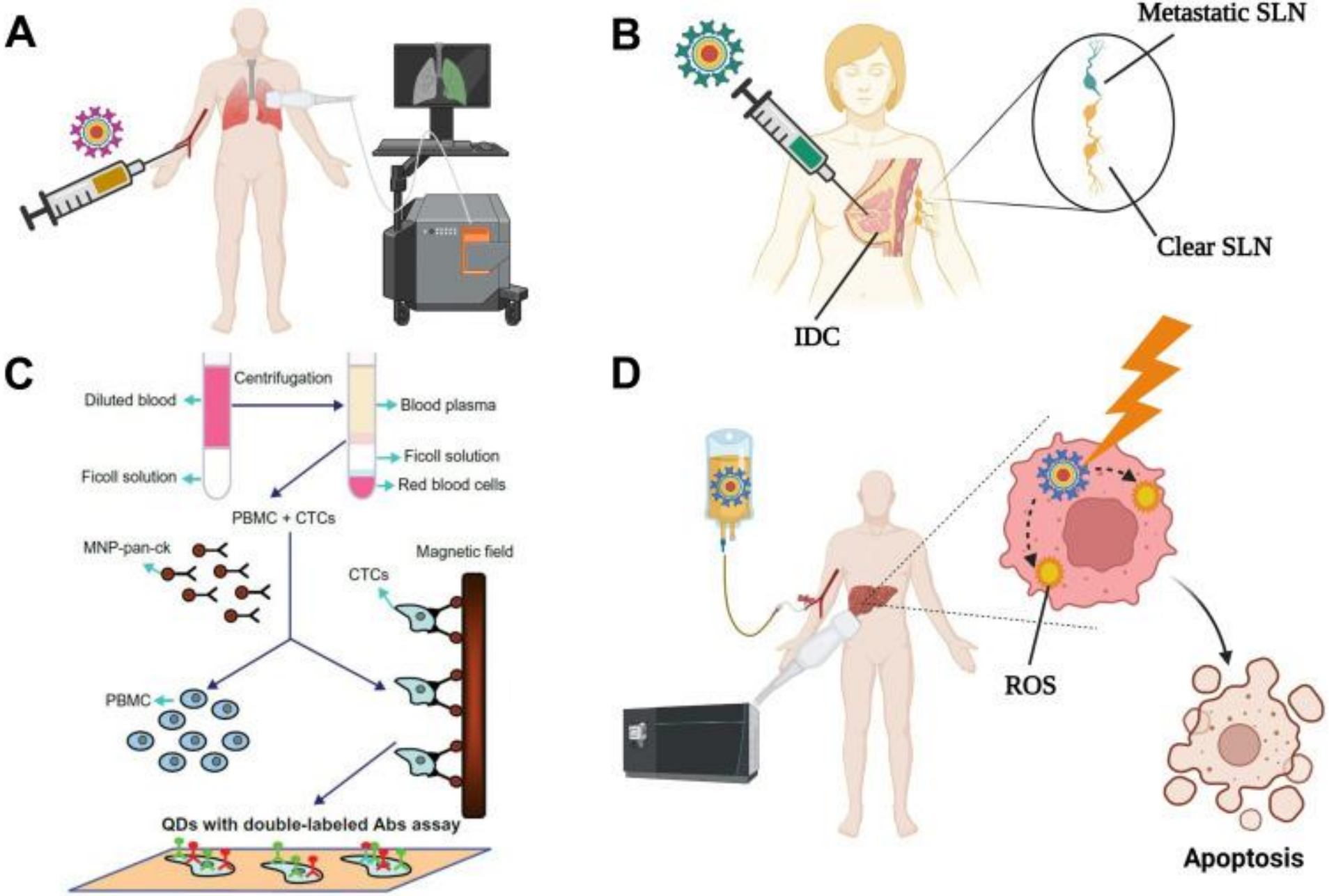
(A) Colloidal synthesis.

(B) Biotemplate-based synthesis. Biological entities such as bacteriophages, genetically-engineered viruses, DNA, or peptides are used as templates to assemble the precursors into QDs.

(C) Electrochemical assembly.

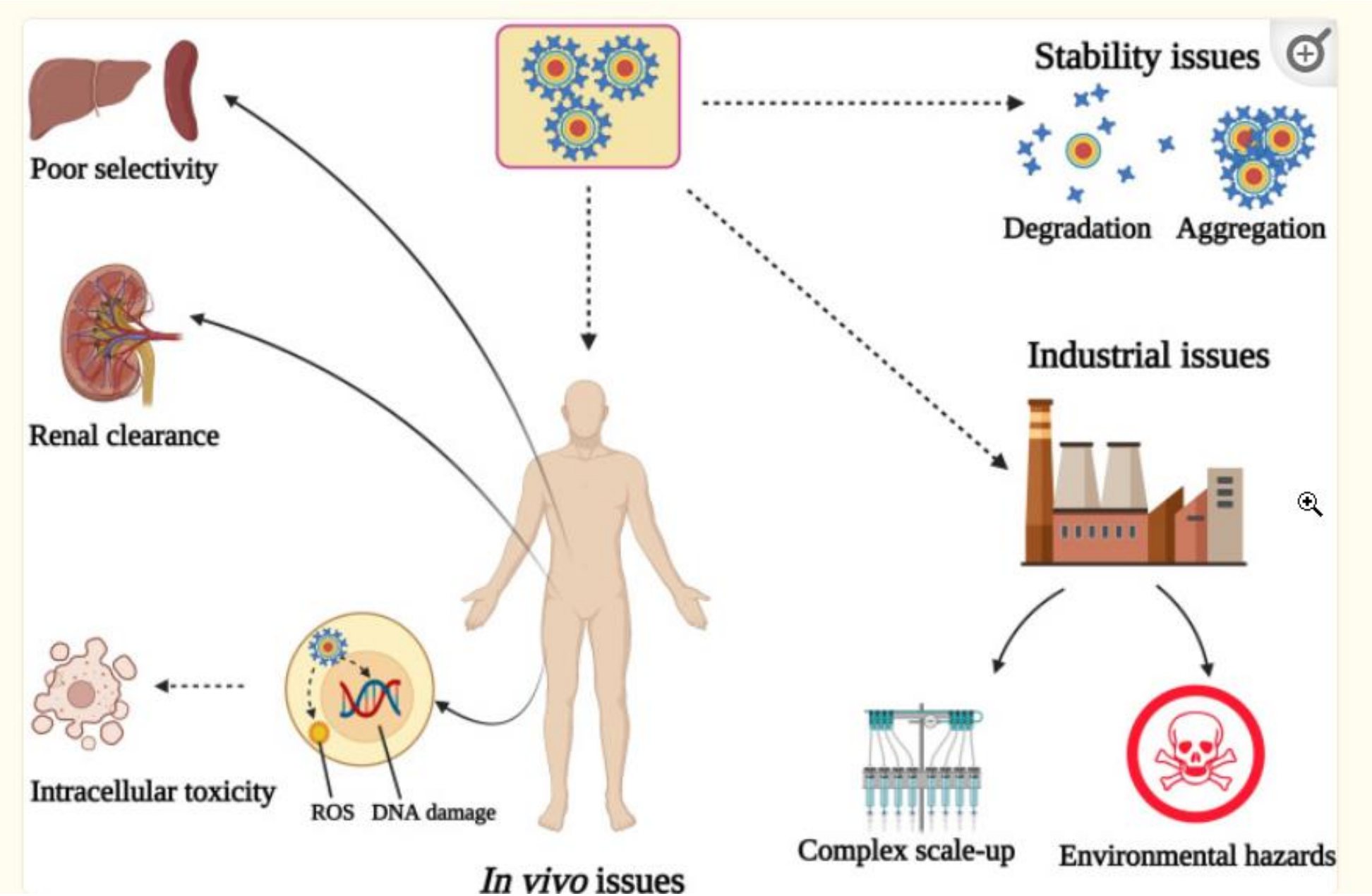
(D) **Biogenic synthesis**. Heavy metal ions are detoxified via binding to cysteine-terminated peptides, followed by their introduction into microorganisms such as E. coli, where they react with the endogenous co-precursors (eg, sulfide ions) and assemble into QDs, which are subsequently exported out of the microorganism.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9076002/



Some biomedical applications of QDs. (A) Intracellular imaging (B) In vivo imaging. (C) Fluorescence-activated cell sorting (FACS) (D) Photodynamic therapy (PDT) (E) Traceable drug delivery vehicles.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9076002/



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9076002/

Sci Transl Med. 2019 Dec 18;11(523):eaay7162. doi: 10.1126/scitranslmed.aay7162.

Biocompatible near-infrared quantum dots delivered to the skin by microneedle patches record vaccination

Kevin J McHugh [1], Lihong Jing [1 2], Sean Y Severt [1], Mache Cruz [1], Morteza Sarmadi [1 3], Hapuarachchige Surangi N Jayawardena [1], Collin F Perkinson [4], Fridrik Larusson [5], Sviatlana Rose [1], Stephanie Tomasic [1], Tyler Graf [1], Stephany Y Tzeng [1], James L Sugarman [1], Daniel Vlasic [6], Matthew Peters [5], Nels Peterson [5], Lowell Wood [5], Wen Tang [1], Jihyeon Yeom [1], Joe Collins [1], Philip A Welkhoff [7], Ari Karchin [5], Megan Tse [1], Mingyuan Gao [2], Moungi G Bawendi [4], Robert Langer [8], Ana Jaklenec [8]

https://pubmed.ncbi.nlm.nih.gov/31852802/

Open Access Review

Current Advances in the Biomedical Applications of Quantum Dots: Promises and Challenges

by **Nhi Le** and **Kyoungtae Kim** *

Department of Biology, Missouri State University, 901 S National, Springfield, MO 65897, USA

* Author to whom correspondence should be addressed.

Int. J. Mol. Sci. **2023**, *24*(16), 12682; **https://doi.org/10.3390/ijms241612682**

Submission received: 12 July 2023 / Revised: 7 August 2023 / Accepted: 8 August 2023 / Published: 11 August 2023

https://www.mdpi.com/1422-0067/24/16/12682

Heineken Prizes

The Royal Netherlands Academy of Arts and Sciences has awarded the Dr A.H. Heineken Prize for Medicine 2020 to Karl Deisseroth, Professor of Bioengineering and of Psychiatry and Behavioural Sciences at Stanford University in California, and Investigator of the Howard Hughes Medical Institute in Maryland, USA. Deisseroth is receiving the prize for developing optogenetics — a method to influence the activity of nerve cells with light — as well as for developing hydrogel-tissue chemistry, which enables researchers to make biological tissue accessible to light and molecular probes. Both discoveries play an important role in current brain research.

https://www.heinekenprizes.org/portfolio-items/karl-deisseroth/

IEEE Spectrum FOR THE TECHNOLOGY INSIDER

NEWS | BIOMEDICAL

No Implants Needed For Precise Control Deep Into The Brain

Optogenetics can now control neural circuits at unprecedented depths within living brain tissue without surgery

BY MEGAN SCUDELLARI | 26 OCT 2020 | 3 MIN READ

https://spectrum.ieee.org/deep-brain-control-without-implants

Deep brain optogenetics without intracranial surgery

Ritchie Chen [#1], Felicity Gore [#1], Quynh-Anh Nguyen [2], Charu Ramakrishnan [1], Sneha Patel [1], Soo Hyun Kim [1], Misha Raffiee [1], Yoon Seok Kim [1], Brian Hsueh [1], Esther Krook-Magnusson [3], Ivan Soltesz [2], Karl Deisseroth [4 5 6]

Affiliations + expand

PMID: 33020604 PMCID: PMC7878426 DOI: 10.1038/s41587-020-0679-9

Abstract

Achieving temporally precise, noninvasive control over specific neural cell types in the deep brain would advance the study of nervous system function. Here we use the potent channelrhodopsin ChRmine to achieve transcranial photoactivation of defined neural circuits, including midbrain and brainstem structures, at unprecedented depths of up to 7 mm with millisecond precision. Using systemic viral delivery of ChRmine, we demonstrate behavioral modulation without surgery, enabling implant-free deep brain optogenetics.

https://pubmed.ncbi.nlm.nih.gov/33020604/

Europe's age of light!

How photonics will power growth and innovation

Strategic Roadmap
2021–2027

Preface

Light technologies are the key enabler for societal megatrends like digitalization, IoT, big data, artificial intelligence and autonomous transportation. Photonics provides vital components to medical technologies for the instant diagnosis of major diseases and will be essential during the digital transformation and Industry 4.0.

While the global photonics market has reached €600 billion, we estimate that only 20% of the potential power and benefits of light technologies have been unlocked. During the next transition towards digitisation, it is clear that photonic technologies are essential and with further development, we are taking steps towards realising our vision of 'Europe's Age of Light'.

https://www.photonics21.org/download/ppp-services/photonics-downloads/Europes-age-of-light-Photonics-Roadmap-C1.pdf

https://www.photonics21.org/2017/photonics21-vision-paper-%E2%80%9Ceurope%E2%80%99s-age-of-light%21-how-photonics-will-power-growth-and-innovation

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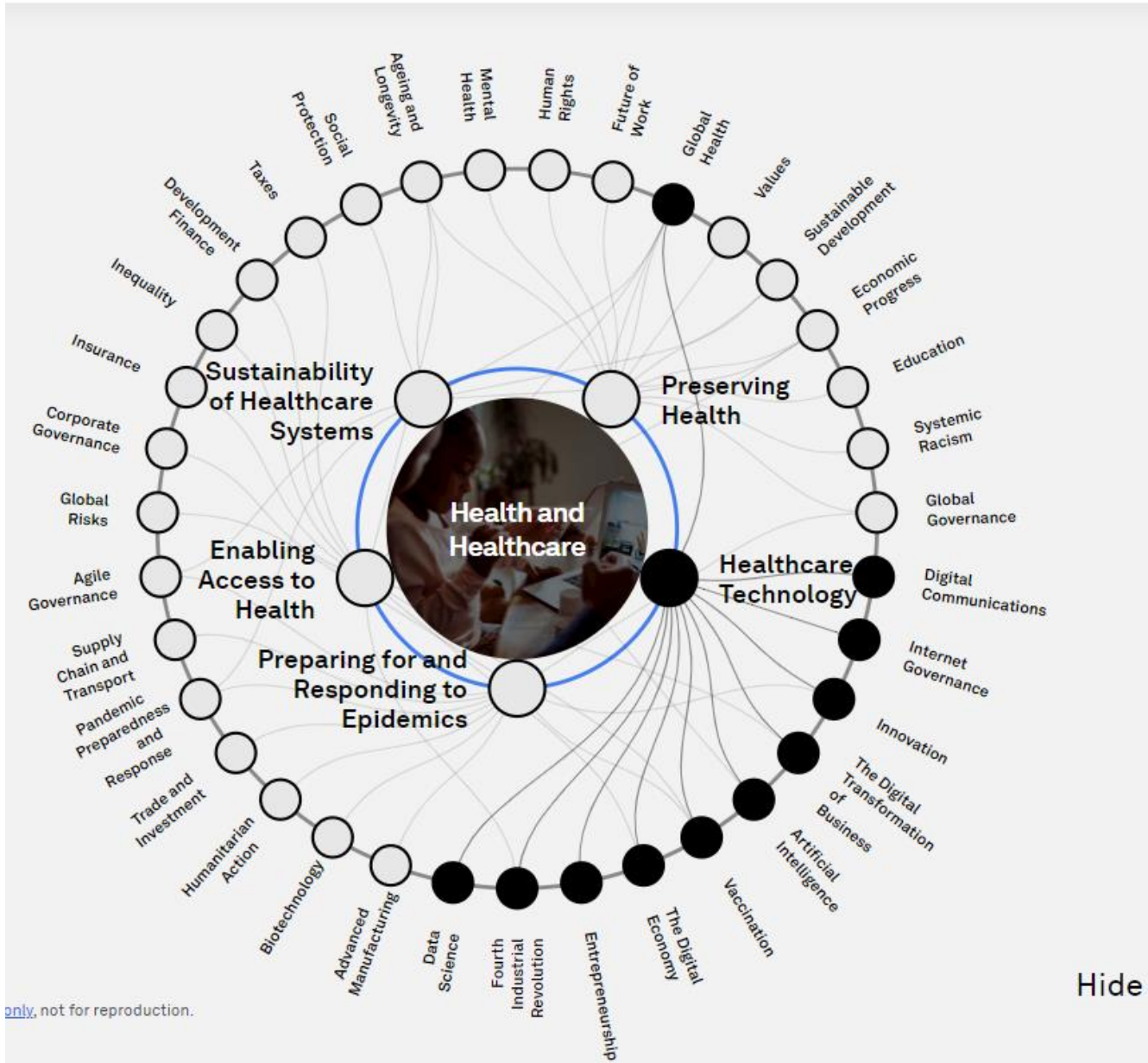

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Big data and artificial intelligence

< Emerging Technologies

Big data and artificial intelligence

Human Genome Editing

Highlights

https://www.who.int/teams/health-ethics-governance/emerging-technologies/big-data-and-artificial-intelligence/

European Commission

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Shaping Europe's digital future

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Home > Policies > European Virtual Human Twins Initiative

European Virtual Human Twins Initiative

The European Virtual Human Twins Initiative is an EU framework supporting the emergence and adoption of the next generation of virtual human twins solutions in health and care.

What is a virtual human twin?

A virtual human twin (VHT) is a digital representation of a human health or disease state. They refer to different levels of human anatomy (e.g. cells, tissues, organs or organ systems). VHTs are built using software models and data and are designed to mimic and predict behaviour of their physical

Quick Links

https://digital-strategy.ec.europa.eu/en/policies/virtual-human-twins

WHY A MANIFESTO

European Virtual Human Twins

The European Virtual Human Twins (VHT) Initiative is a flagship initiative of the European Commission to foster and accelerate the development of integrated, validated digital representations of the human body. These VHTs hold substantial potential for medical research and healthcare delivery, contributing to a deeper understanding of human physiology, pathology, and disease aetiology, as well as facilitating personalised, patient-centric medicine. This Initiative includes the envisaged European VHT platform, enabling the pooling of resources, assets to further develop the science and technology required for building advanced VHT-based solutions in health and care.

An essential element of the Initiative is the VIRTUAL HUMAN TWINS MANIFESTO "A Statement of Intent on Development, Evidence, and Adoption in Healthcare Systems". This Statement of Intent serves the purpose of promoting collaboration in the current VHT ecosystem, by bringing together various ecosystem stakeholders to demonstrate their support for the European VHT Initiative, while also facilitating the context for further collaboration

https://www.virtualhumantwins.eu/

European Commission

English

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European '1+ Million Genomes' Initiative

The 1+ Million Genomes (1+MG) initiative has the potential to improve disease prevention, allow for more personalised treatments and support groundbreaking research.

What is the 1+MG flagship initiative?

The EU's flagship '1+ Million Genomes' (1+MG) initiative aims to enable secure access to genomics and the corresponding clinical data across Europe to support groundbreaking research and health policy making and incentivise personalised healthcare treatments with the potential to improve disease prevention. This is one of the world's biggest projects on genomics and contributes chiefly to setting global standards in this domain.

https://digital-strategy.ec.europa.eu/en/policies/1-million-genomes

The **Genomic Data Infrastructure (GDI)** project is enabling access to genomic and related phenotypic and clinical data across Europe. It is doing this by establishing a federated, sustainable and secure infrastructure to access the data. It builds on the outputs of the Beyond 1 Million Genomes (B1MG) project and is realising the ambition of the 1+Million Genomes (1+MG) initiative.

The data

The project involves **human genomic and related phenotypic and clinical data** held in databases across Europe. The project will focus on the Genome of Europe (a network of national reference genome collections), and cancer and infectious disease use cases. "Real" synthetic data will be used for validation before data are available through the infrastructure.

Who will access it?

Controlled access will be given to **approved clinicians, scientists in the public and private sector and healthcare policy makers**. Non-sensitive and aggregated data will be openly discoverable through the European Genome Dashboard and a federated query system. This system will support genotypic and phenotypic queries in natural language.

https://gdi.onemilliongenomes.eu/

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DIGIBYTE | Publication 27 June 2023

EU advances on quantum technologies

The European High Performance Computing Joint Undertaking (EuroHPC JU) announced earlier this week the signature of six hosting agreements for the upcoming European quantum computers with Italy, Poland, Spain, France, Germany, and the Czech Republic.

copyright EuroHPC

The signing ceremony, which took place at the EuroHPC JU premises in Luxembourg, was attended by representatives from the hosting organisations and the European Commission.

These first European quantum computers, which are expected to be operational by 2025, are a

https://digital-strategy.ec.europa.eu/en/news/eu-advances-quantum-technologies

The importance of the big picture, of collaboration between domains

- **we are witnessing an accelerated but non-transparent evolution of technology**
- **nano/micro size devices or waves, invisible to the human eye, are used.**
- **insufficiently known technologies, even by specialists in the fields in which they are already applied or are to be implemented**
- **the terminology is specific, the information is difficult to access, being found almost exclusively in technology journals.**

- some of these technologies are not well regulated, they have harmful effects on people's health.
- significant funding for such projects creates pressure for them to be accepted and integrated, ignoring the precautionary principle.
- there is less and less talk about prevention, about a healthy lifestyle, things that cost almost nothing.
- correct information of doctors, debates on these topics are absolutely necessary
- they can very easily turn from methods of diagnosis and treatment into invisible weapons against humanity.

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Finanțat de Uniunea Europeană

Platforma Națională de Tehnologii Semiconductoare PNTS

Invită IMM-urile inovative interesate de dezvoltarea unor produse și tehnologii microelectronice să se alăture consorțiului de implementare.

https://www.imt.ro/PNTS/

Nou! SELECȚIE 2

International activities

- IMT-Bucharest in HORIZON EUROPE
- IMT-Bucharest in EDF
- IMT-Bucharest in HORIZON 2020
- IMT-Bucharest in FP7& related
- IMT-Bucharest in ESA projects
- IMT-Bucharest in RO14, EEA Research Programme
- IMT-Bucharest in FP6

New projects

Horizon Europe

1. SPIDER - Computation Systems Based on Hybrid Spin-wave–CMOS Integrated Architectures

Highlights/ Events

- The Special Award for IMT Bucharest at 2024 Romanian Research Gala, an event organized by the MCID

- **CAS 2024**, 47th Edition of International

Services offered

ISO 9001:2015

- **IMT-MINAFAB**- IMT support centre for MIcro- and NAnoFABrication
- **IMT-Bucharest- your reliable partner** (Services brochure)

Facilities

- Characterization tools
- Computation, Simulation and Design tools
- Processing equipments
- Reability and testing tools

https://www.imt.ro/

RE: [EXTERNAL] - Apel de la un medic român

Roco, Mihail C. lun., 8 ian., 18:08 (acum 23 de ore)

către eu

Dr. Geanina Hagimă,

I have received your e-mail with your comments and personal opinions on nanoscale science and engineering.

The National Nanotechnology Initiative is a science-based project and program where societal implications, including environmental and health effects, have been addressed from its beginning. All natural and man-made objects are built from atoms and molecules and have a nanostructure at the first level of organization of atoms. Nanostructure are encountered in every material object or organism, and by itself is not dangerous. Understanding and properly using nanoscale science and engineering makes the world better in a fundamental way. Combating possible misuses of nanotechnology must be addressed in each application. The general concerns must be addressed by researchers and manufacturers, and for specific product concerns it is the primarily responsibility of those making the new specific products to investigate. The regulatory framework is affected by political factors in each country and region. For example, the vaccine manufacturers must address the efficacy and safety of their products.

I am not involved directly in medical research applications and I am not able to address your suggestions. If there are concerns of governance of nanotechnology in Europe, please consider writing to the EU/EC or local industry.

Sincerely,
Mihail Roco
NSF

- **information was lacking, medicine is directed on an uncertain, experimental path.**
- **the real benefits of using advanced technologies, invisible to the human eye, must be carefully and objectively weighed**
- **their use may result in damage to the physical and mental integrity, rights and freedoms of people**
- **it is necessary to immediately stop the use of technologies of which there is evidence or suspicion that they could have negative effects**
- **they can irreversibly transform the world we live in.**

Albert Einstein

"I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones".

I hope that this article will be useful for information and, at the same time, will be an alarm signal and a justification for urgently conducting such debates that will have the most urgent decision-making impact.

We can no longer neglect THE ELEPHANT IN THE ROOM!